PHIBRO-TECH, INC.

July 17, 2002

Ms. Rebecca Chou
California RWQCB, L.A. Region
320 West 4th Street, Suite 200
Los Angeles, CA 90013

• Mr. Ron Leach
USEPA, Region IX (H-4-4)
75 Hawthorne Avenue
San Francisco, CA 94105

Ms. Karen Baker
Permitting Division
Department of Toxic Substances Control
5796 Corporate Avenue
Cypress, CA 90630

Dear Mss. Chou and Baker and Mr. Leach:

Enclosed is the April 2002 Quarterly Groundwater Monitoring Report for Phibro-Tech, Inc., Santa Fe Springs facility. The Report includes analytical results and physical measurements obtained April 16 – 18, 2002 from selected monitoring wells at Phibro-Tech. Since this Report includes portions of the RCRA Facility Investigation (USEPA Docket No. RCRA 09-89-0001), this Report will also be submitted to the EPA.

Based on a technical review by our consultant, Camp Dresser and McKee, a groundwater-monitoring program is included which was implemented beginning with the April 1991 groundwater monitoring. Additional wells and parameters changed at the request of EPA are included in this Groundwater Monitoring Report. The changes are described in the Report.

Please contact me if you have any questions or comments concerning this Report.

Sincerely,

Alonso F. Alatorre
Plant Manager

Enclosure

cc: see following page

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grdwtrrptcoverltr

CDM

Phibro-Tech, Inc.

April 2002
Quarterly Sampling Report
Santa Fe Springs, California

July 5, 2002

Prepared for:

Phibro-Tech, Inc. (PTI)
8851 Dice Road
Santa Fe Springs, California 90670

Prepared by:

CDM
18881 Von Karman Avenue, Suite 650
Irvine, California 92612

Project No.: 2279-11463-111.REP.REPT

Phibro-Tech, Inc.

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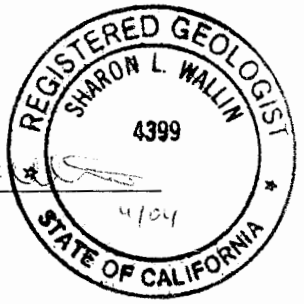
The information contained in the April 2002 Quarterly Sampling Report for the Phibro-Tech, Inc. facility has received appropriate technical review and approval. The activities outlined in the report were performed under the supervision of a Registered Geologist or a California Professional Engineer.

Reviewed and Approved by:



4/04

Sharon L. Wallin, R.G.

Project Manager

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Section 1
Introduction

This report summarizes the April 2002 quarterly groundwater monitoring and sampling event at the Phibro-Tech, Inc. (PTI), Santa Fe Springs, California facility (formerly referred to as Southern California Chemical). This report presents the second quarter groundwater analysis for 2002. Contained herein are the results of laboratory analyses of groundwater samples and water level measurements obtained during the period of April 16 through April 18, 2002.

The purpose of this monitoring program, which began in March 1985, is to determine if compounds of concern detected in groundwater beneath the site are migrating from the facility. This objective is accomplished through the comparison of background or up gradient water quality and groundwater quality beneath the site. Statistically significant increases in contaminant concentrations between known areas of groundwater contamination and down gradient wells would indicate that migration is occurring. In the past, statistical analysis was performed annually and was included in the July quarterly monitoring reports. Statistical analysis is now conducted for each sampling event and is included in the corresponding monitoring report.

To date, three types of contaminants have generally been detected in the groundwater beneath the site: soluble metals (primarily chromium and cadmium), purgeable aromatic organic compounds (toluene, ethylbenzene and total xylenes [BTEX]) and purgeable halogenated organic compounds (i.e., solvents, primarily trichloroethene [TCE]). Groundwater modeling completed in January 1993, and groundwater monitoring conducted since 1985, indicates that the purgeable aromatic plume originated up gradient from the PTI facility. The distribution of TCE appears to be ubiquitous, although somewhat elevated concentrations exist in the vicinity of Pond 1, a RCRA-regulated former surface impoundment area. Elevated concentrations of soluble metals have also been consistently detected in the vicinity of Pond 1. Soluble metal concentrations at the down gradient property line and in deeper wells, however, continue to be near or below detection.

Approximately 16 years of quarterly groundwater monitoring at the PTI facility has indicated that dissolved hexavalent chromium is not migrating. During groundwater modeling performed by CDM in 1993, a retardation factor of 50 was selected based on the observed distribution of hexavalent chromium in the groundwater. Previous data analysis indicated that the most likely basis for the relatively high (but within the range of reasonable and appropriate values) retardation factor would be the existence of reducing conditions in the saturated zone, promoting the chemical reduction of hexavalent chromium to trivalent chromium (Cr 3+). Trivalent chromium, having a very low solubility in water, tends to precipitate and sorb to the soil, inhibiting migration. During four quarterly sampling events conducted in 1996, additional laboratory analyses (iron and redox potential) were performed on groundwater samples collected from wells MW-04, MW-09, and MW-14S. These additional data,

along with the pH, total chromium, and hexavalent chromium data, provided a better understanding of the mechanisms controlling chromium migration in groundwater underlying the facility and supported the above hypothesis. Please refer to Section 6.4 (Chromium Fate and Transport) of the October 1996 Quarterly Sampling Report for a detailed discussion of this conclusion.

In addition to the data obtained during the April 2002 sampling, this report contains tables listing detection limits of the parameters analyzed (Appendix A). Historical sampling results for selected analytes from January 1989 to April 2001 are presented in Appendix B. Copies of the original laboratory results are included in Appendix C. Chain-of-custody records for the April 2002 sampling are included in Appendix D. Appendix E contains background groundwater concentrations of contaminants for the Santa Fe Springs area for the year 1999. Appendix F contains the complete quarterly statistical analysis.

Prior to October 1993, quarterly reports have included analytical result summary tables from all previous sampling rounds. Starting with the October 1993 quarterly report, historical water quality data tables are no longer included in the report as an appendix. Please refer to Appendix B in the July 1993 Quarterly Sampling Report for a summary of historical groundwater analytical data. A summary table of selected historical results since January 1989 is provided in Appendix B of this report.

Section 2
Monitoring Well Sampling

CDM personnel conducted groundwater-sampling activities, utilizing existing on-site monitoring wells, during the period of April 16 through April 18, 2002. Field activities were performed in general accordance with the groundwater sampling protocols as outlined in Section 4.3.3 of the approved RCRA Facility Investigation (RFI) Work Plan (CDM, June 1990). Prior to the submittal of the RFI Work Plan for regulatory agency review and approval, the J.H. Kleinfelder and Associates (Kleinfelder) Quality Assurance Project Plan (QAPP, May 1988) was used as the primary groundwater sampling guidance document. Proposed deviations from the RFI Work Plan (i.e., well purging using a submersible pump and sample collection using disposable bailers) were discussed in October 1994 correspondence to the DTSC. These changes were implemented during the October 1994 and all subsequent sampling events.

Twenty-four monitoring wells exist on-site. The locations of these wells are shown on Figure 2-1. One well, MW-06A, historically has not been sampled for groundwater analysis because it is screened in the Gage Aquifer, which is unsaturated below the PTI facility. The remaining wells are screened in the Hollydale Aquifer; 16 in the upper portion and 7 in the lower portion of the aquifer.

Beginning in February 1985, Kleinfelder initiated groundwater sampling, utilizing monitoring wells MW-01 through MW-06B. Six additional wells (MW-04A and MW-07 through MW-11) were installed at the site in July 1985, thereby increasing the total number of active wells to 12. Quarterly sampling of the 12 wells was initiated in March 1986.

Commencing with the January 1989 sampling event, CDM has been responsible for all groundwater-monitoring activities at the facility. Ten wells (MW-01D, MW-06D, MW-12S, MW-12D, MW-13S, MW-13D, MW-14S, MW-14D, MW-15S and MW-15D) were installed as part of the first phase of the RFI program and were first sampled during the October 1990 sampling round.

Groundwater analysis of the 22 wells that existed during the RFI program from October 1990 to January 1991, indicated that the number of wells sampled could be reduced and yield comparable results to sampling all the wells. During sampling rounds in April, July, and October 1991, and in January 1992, 11 wells were sampled. Wells screened in the upper portion of the Hollydale Aquifer included MW-01S, MW-03, MW-04, MW-07, MW-09, MW-11, MW-14S, and MW-15S, and wells screened in the lower portion of the Hollydale Aquifer included MW-01D, MW-04A, and MW-15D.

Beginning with the April 1992 sampling round, three additional wells (MW-06B, MW-06D, and MW-16) were included in the quarterly monitoring program, bringing the total number of sampled wells to 14. Well MW-16, constructed in March 1992 as

part of the Phase II RFI program, was sampled for the first time during the April 1992 sampling round. The same 14 wells have been sampled during all subsequent sampling rounds. On several occasions, additional laboratory analyses have been performed and additional wells included in quarterly sampling, at the request of the U.S. EPA. Additional analyses and wells are noted in the comment column of Table 2-1, which summarizes the groundwater-monitoring program at the site.

In April 2000, the frequency of groundwater monitoring was reduced from quarterly to semi-annually. In April 2001, as requested by the California Department of Toxic Substances Control (DTSC), quarterly sampling was re-implemented.

The 14 wells currently included in quarterly sampling are MW-01S, MW-01D, MW-03, MW-04, MW-04A, MW-06B, MW-06D, MW-07, MW-09, MW-11, MW-14S, MW-15S, MW-15D, and MW-16. Ten shallow and four deep wells are analyzed for pH, metals (cadmium [Cd], chromium [Cr], and copper [Cu]) using EPA Method 6010A; hexavalent chromium (EPA Method 7199), and volatile organic compounds (EPA Method 8260). During the July 2001 and October 2001 sampling events, DTSC requested that wells MW-01S, MW-04, MW-09 and MW-11 be analyzed for 1,4-Dioxane. A detailed listing of analytical parameters per sampling event is provided in Table 2-1.

The 14 on site wells were purged and sampled in the following order: MW-01S, MW-01D, MW-03, MW-15D, MW-15S, MW-06D, MW-06B, MW-14S, MW-04A, MW-04, MW-16, MW-09, MW-07, and MW-11.

2.1 Sampling Procedure

Field sampling was conducted in general accordance with procedures detailed in the RFI Work Plan. Sampling practices included the following: check for floating product and hydrocarbon vapors at each well; measure static water level and total depth of each well in order to calculate pre-sampling evacuation volumes; purge each well and collect a groundwater sample for laboratory analysis; decontaminate sampling equipment; and handle sample-filled containers in accordance with Section 4.3.3.5 of the RFI Work Plan.

2.1.1 Organic Vapor Check

Standard field procedures included checking the interior of each well with a photoionization detector (PID) (equipped with a 10.0 eV lamp) for the presence of organic vapors whenever the well casing was opened. With the sampling team members standing upwind of the well, the well cap was opened slightly, allowing for the insertion of the PID probe tip inside the well. Readings were monitored until they stabilized, which was usually at zero parts per million (ppm). The final reading, as well as the peak reading, were recorded in the field logbook. The cap was then removed and the well allowed to vent for a short period of time prior to measuring the static water level. The maximum PID readings taken during the collection of water level measurements are shown in Table 5-1 in Section 5.

2.1.2 Detection of Immiscible Layers

In order to detect the presence of floating, immiscible layers on top of the groundwater surface, a clear bailer was lowered approximately one-half the length of the bailer below the surface of the water in each well. The bailer was removed from the well and its contents checked for immiscible layers or iridescence. The bailer was decontaminated and the sampling line discarded after each use. If immiscible fluids had been detected, a sample would have been collected for laboratory analysis of purgeable halocarbons and aromatics (EPA Method 8260) and total petroleum hydrocarbons (California Department of Health Services [CA DHS] Method) using a new bailer. As in all previous quarterly groundwater sampling at the PTI facility by CDM, immiscible layers were not detected during the April 2002 sampling event.

2.1.3 Static Water Level/Well Depth Measurement

On April 16, 2002, prior to the initiation of on-site well pumping, the static water level at 23 of the 24 on-site wells was measured three times at each well location with a decontaminated electric water level indicator (sounder) and recorded. The measurements collected in the wells were identical, therefore, there was no need to collect additional measurements or average the data of these wells. The results of these measurements are shown in Table 5-1 and discussed in Section 5. One well (MW-06A) was dry, and MW-02 was not measured due to its proximity to MW-12S.

The water level in each well was also measured immediately prior to initiating well evacuation procedures for calculation of well purge volume. During measurement, the measuring (reference) point used was noted (i.e., the top of the steel casing), and the depth to water below the reference point was measured to the nearest 0.01 foot and recorded in the field logbook. Wellhead elevation data was used with depth to water measurements to calculate groundwater elevation at each well location.

The total depth of each well sampled was also measured with the sounder to the nearest 0.1 foot. The amount of fill material in the bottom of the well was calculated from well construction data and noted in the logbook. Prior to first use, the sounder was calibrated and the meter response checked. The sounder probe and line were decontaminated after each use.

2.1.4 Purge Volume Determination/Well Evacuation

Saturated casing volume was calculated at each well by using the depth to water and bottom sounding measurements obtained immediately prior to purging, to calculate the amount (height) of the saturated well casing. The inside diameter of the casing was then measured, and the following formula applied:

$$\text{Volume} = \pi\ (\text{radius}^2) \times \text{height}$$

A minimum of three saturated casing volumes of water was evacuated from each well prior to collecting a groundwater sample for laboratory analysis.

During the April 2002 sampling round, all 14 of the wells currently monitored were purged using a portable Grundfos 2-inch diameter submersible pump, and each well was sampled using a new disposable bailer.

Field parameters were measured during well evacuation using Myron-L multimeter and Hach turbidity meter for all wells. The instruments were calibrated or field checked prior to use with standard solutions in accordance with manufacturer's directions. The meters are used to determine the stability of discharge water field parameters prior to collection of a sample for laboratory analysis.

Periodically during well evacuation, the field parameters of the discharge water were measured and recorded in the logbook. The physical appearance of the water (turbidity, color, sediment content, etc.) was also noted and recorded. Initial field turbidity measurements generally ranged from 0.2 to greater than 1,000 NTUs (nephelometric turbidity units) at the start of well evacuation. At the end of well evacuation, measurements were generally less than 10 NTUs. Higher turbidity at the start of purging seems to be related to agitating the water column and resuspending material from the bottom of the well during pump installation. After a minimum of three saturated casing volumes of water were evacuated from each well and the field parameters stabilized (change between readings of less than 5 to 10 percent), a sample for laboratory analysis was collected.

All purge water collected from each well was contained in a 250-gallon truck-mounted portable tank and then discharged directly into the PTI facility's wastewater treatment system.

2.1.5 Sample Collection and Handling

Groundwater samples were collected with a new disposable bailer from the approximate middle of the perforated section, and poured directly into previously labeled sample bottles. During sample collection, the bailer was carefully and gently lowered past the air/water interface to minimize agitation and aeration of water during sample collection. The sample bottles were placed inside plastic zip-lock bags and then placed immediately into an ice-cooled chest. Prior to shipment, the bottles were cushioned with bubble wrap or plastic bags to avoid breakage. Samples collected for total metals analysis were field filtered using a 0.45-micron filter. A volume of groundwater equal to two times the capacity of the filtering device was passed through the filter and discarded prior to filtering each sample for total dissolved metals (Cd, Cu, and Cr) analysis. Filters were discarded after each use.

The April 2002 groundwater samples were collected for laboratory analysis of the following parameters:

- Volatile Organic Compounds by EPA method 8260
- Metals (Cd, Cu, and Cr)

- Hexavalent Chromium (Cr^{+6})
- pH

Groundwater sample bottles were numbered using the following format:

PTI-MW01S-053

Where:

PTI	-	designates site acronym
MW01S	-	designates sample location number (MW = Monitoring Well)
EB	-	designates equipment blank sample
TB	-	designates travel blank sample
053	-	designates sequential sample number (per sampling event)

This was the 52nd round of sampling conducted by CDM, however, due to a previous labeling inconsistency, a 053 sequence number was assigned to all groundwater samples collected during this round. Sample label information included date and time of sampling, CDM sample number, and analytical parameters.

Chain-of-custody forms that indicated the label information as well as the responsible person during each step of the transportation process accompanied all filled sample containers that were collected from each well. All samples were sent by courier to Severn Trent Laboratories (STL) in Santa Ana, California on the day that they were collected, and a copy of the chain-of-custody form for that day was retained by CDM field personnel. Copies of completed chain-of-custody forms are included in Appendix C. The laboratory was notified at the time of delivery that one or more hexavalent chromium (Cr^{+6}) sample(s) were contained in the shipment to ensure that the samples would be analyzed within the prescribed 24-hour holding period.

2.2 Equipment Decontamination Procedures

The following sections describe the procedures utilized to decontaminate groundwater-sampling equipment.

2.2.1 Sampling Pump/Lines Decontamination

The submersible pump and discharge tubing used for well purging were decontaminated to reduce the possibility of cross-contamination between monitoring wells. The first step in the decontamination procedure was to submerge the pump into a 4-foot section of 4-inch diameter PVC pipe containing a soap (Alconox, a laboratory-grade detergent) and water mixture. Then, at least five gallons of the solution were pumped through the system. The pump assembly was then submerged in another section of PVC pipe filled with tap water and at least 10 gallons were pumped through the system. The final decontamination step was accomplished by

submerging the pump into another section of PVC pipe containing deionized (DI) water and pumping approximately five gallons of DI water through the system.

The exterior of the pump and discharge tubing was steam cleaned, as well as the exterior of the reel holding the tubing. The decontamination of the exterior pump line was performed over a stainless steel containment basin located on the groundwater-sampling rig. The spent water was recovered and discharged into the facility's wastewater treatment system.

2.2.2 Accessory Sampling Equipment Decontamination

Accessory sampling equipment such as the metals filter apparatus and water level sounder were also decontaminated to minimize the possibility of cross-contamination between the monitoring wells. The filter apparatus and sounder were decontaminated first by washing in a bucket of soap and water, followed by a tap water rinse, followed by a final DI water rinse. Bailers used to test for an immiscible layer were decontaminated and reused. The bailers and nylon rope that were used to sample wells were discarded immediately after use.

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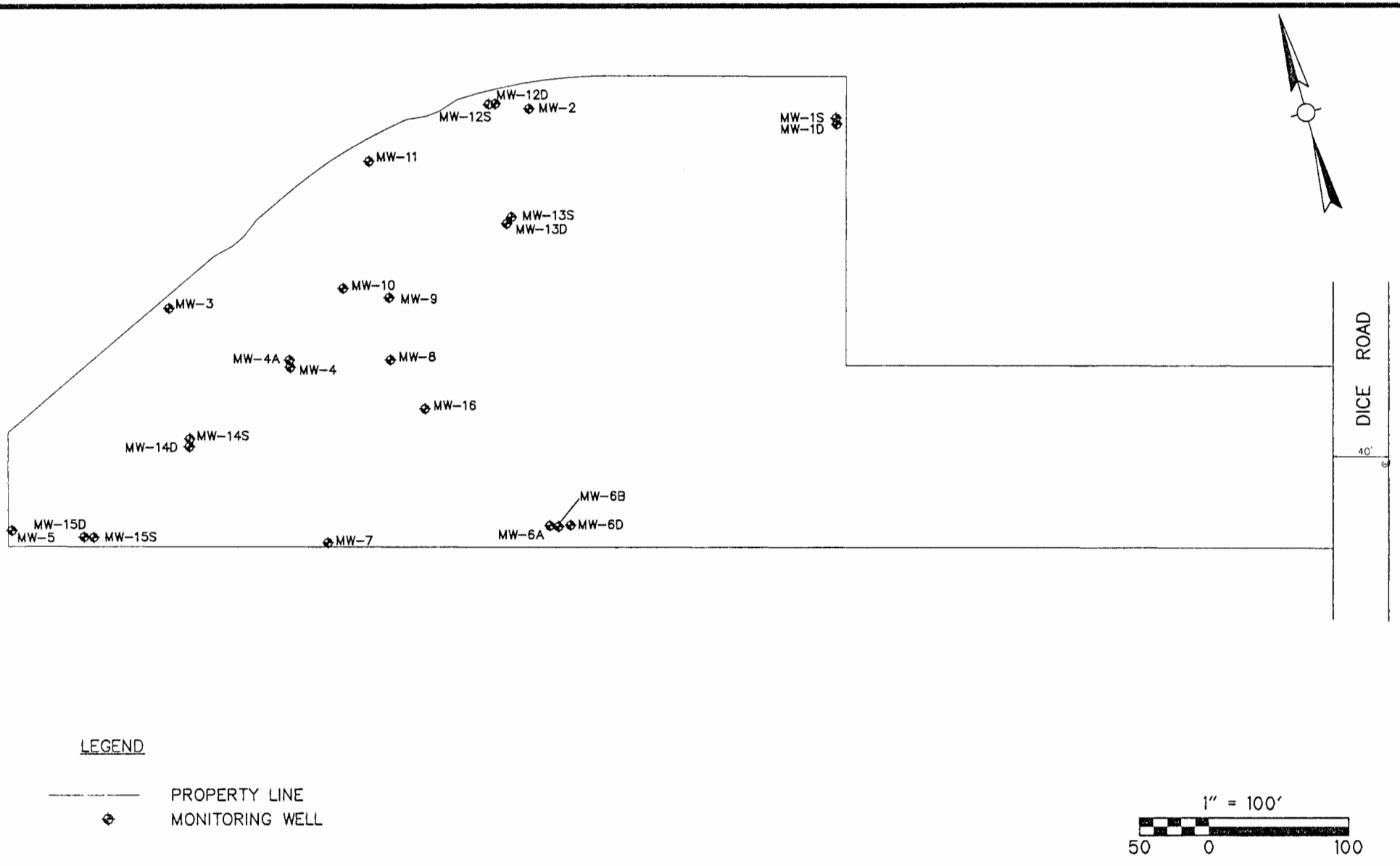

PHIBRO-TECH, INC., SANTA FE SPRINGS, CA

MONITORING WELL LOCATION MAP

CDM
environmental engineers, scientists, planners, & management consultants

Figure 2-1

Table 2-1
PHIBRO-TECH, INC.
Groundwater Monitoring Program Summary

Sampling Event	Indicator Parameters	Trace Metals	Hexavalent Chromium	Chloride	Nitrate	Volatile Organics	Appendix IX	1,4-Dioxane	Comments
3/85	Quad	Cu & Zn	X	X	X	--	--	--	Sampled wells MW-1, 2, 3, 4, 5, & 6B. Sulfide, nickel, copper and zinc requested by DOHS and RWQCB. Also Appendix III parameters and water quality parameters (see footnote).
7/85	Quad	Cd, Cr	X	--	X	--	--	--	Sampled wells MW-4A, 7, 8, 10 and 11
3/86	Quad	Cu & Zn	X	X	X	--	--	--	Sampled 12 wells (MW1, 2, 3, 4, 4A, 5, 6B, 7, 8, 9, 10 & 11). Also Appendix III parameters and water quality parameters (see footnote).
7/86, 9/86, 12/86	Quad	Cd, Cr, Cu, Zn	X	X	X	624	--	--	Sampled all 12 wells (as previous)
3/87	Quad	Cd, Cr, Cu, Zn	X	X	X	601/602	--	--	Sampled 11 wells, not 4A
7/87, 10/87, 2/88	Quad	Cd, Cr, Cu, Zn	X	X	X	601/602	--	--	After July 1987, all 12 wells were sampled during each event
6/88	X (not Quad)	Cd, Cr, Cu, Zn	X	X	X	601/602	--	--	Performed statistical analysis (t-test) on Indicator Parameters (IPs).
9/88	--	Cd, Cr, Cu, Zn	X	X	X	601/602	--	--	IPs & volatile organics from MW1, 2, 4A, 5, 6, 7 analyzed semi-annually in June/Dec.
1/89	Quad	Cd, Cr, Cu, Zn	X	X	X	601/602	--	--	After Jan. 1989, volatile organics analyzed for all 12 wells.
4/89	--	Cd, Cr, Cu, Zn	X	X	X	601/602	--	--	
7/89	Quad	Cd, Cr, Cu, Zn	X	X	X	601/602	--	--	Performed statistical analysis of Jan. thru July 1989 data (IPs, total and hexavalent chromium).
10/89	--	Cd, Cr, Cu, Zn	X	X	X	601/602	--	--	
1/90	Quad	Cd, Cr, Cu, Zn	X	X	X	601/602	--	--	
4/90	--	Cd, Cr, Cu, Zn	X	X	X	601/602	--	--	

TABLE 2-1
PHIBRO-TECH, INC.
Groundwater Monitoring Program Summary
(continued)

Sampling Event	Indicator Parameters	Trace Metals	Hexavalent Chromium	Chloride	Nitrate	Volatile Organics	Appendix IX	1,4-Dioxane	Comments
7/90	Quad	Cd, Cr, Cu, Zn	X	X	X	601/602	--	--	Performed statistical analysis of Jan. 1989 data (IPs, total and hexavalent chromium).
10/90	--	Cd, Cr, Cu, Fe, Ni, Pb, Zn	X	X	X	601/602	X	--	Sampled 22 wells, Appendix IX parameters analyses were performed on wells 4, 4A, 6B, 6D, 12S, 12D, 15S, 15D, plus a duplicate of 4.
1/91	Quad	Cd, Cr, Cu, Fe, Ni, Pb, Zn	X	X	X	601/602	--	--	Sampled 22 wells.
4/91	pH	Cd, Cr, Cu	X	--	--	601/602	--	--	New sampling program was initiated. Sampled 11 wells including wells MW-01S, MW-01D, -03, -04, -04A, -07, -09, -11, -14S, -15S, -15D.
7/91	pH	Cd, Cr, Cu	X	--	--	601/602	--	--	Performed annual statistical analysis.
10/91	pH	Cd, Cr, Cu	X	--	--	601/602	--	--	
1/92	pH only (all) TOC only (MW-01 & -04)	Cd, Cr, Cu	X	--	Ammonia as nitrogen (MW-01 & -04)	601/602	--	--	Ammonia & TOC analyses added at MW-01S and MW-04.
4/92	pH only TOC only (MW-01 , -04, -09, -14S)	Cd, Cr, Cu-all see comments	X	--	Ammonia as nitrogen (MW-01, -04, -09, -14S)	601/602	EDB (MW-04) TPH (W-16)	--	Sampled 14 wells including Wells MW-01S, -01D, -03, -04, -04A, -06B, -06D, -07, -09, -11, -14S, -15S, -15D, -16. Additional analysis as part of Phase II RFI; unfiltered metals on MW-04S and -14S. Pb and Ni on wells 1, 4, 14S, 15S, 16; Fe, Zn on well 16.
7/92	pH	Cd, Cr, Cu	X	--	--	601/602	--	--	Sampled 14 wells. Performed annual statistical analysis.
10/92	pH	Cd, Cr, Cu	X	--	--	601/602	--	--	Sampled 14 wells.

TABLE 2-1
PHIBRO-TECH, INC.
Groundwater Monitoring Program Summary
(continued)

Sampling Event	Indicator Parameters	Trace Metals	Hexavalent Chromium	Chloride	Nitrate	Volatile Organics	Appendix IX	1,4-Dioxane	Comments
1/93, 4/93	pH	Cd, Cr, Cu	X	--	--	8010/8020	--	--	Sampled 14 wells.
7/93	pH	Cd, Cr, Cu	X	--	--	8010/8020 (TVPH, TEPH)	--	--	Sampled 15 wells. (MW-13S was added) TVPH and TEPH analysis on MW-09, 13S, and 16 only. Performed annual statistical analysis.
10/93	pH	Cd, Cr, Cu	X	--	--	8010/8020	--	--	Sampled 15 wells (MW-13S not analyzed for metals and pH) TVPH & TEPH analysis on MW-04, 07, 09, 13S, and 16 only. Performed statistical analysis.
1/94, 4/94	pH	Cd, Cr, Cu	X	--	--	8010/8020	--	--	Sampled 14 wells Performed statistical analysis.
7/94	pH	Cd, Cr, Cu	X	See comment	--	8010/8020	--	--	Sampled 14 wells, chloride and sulfate analyses on MW-04, MW-09, MW-14S, MW-15S, MW-15D, and MW-16. Performed statistical analysis
10/94, 1/95, 4/95, 7/95, 10/95	pH	Cd, Cr, Cu	X	--	--	8010/8020	--	--	Sampled 14 wells Performed statistical analysis.
1/96	pH	Cd, Cr, Cu	X	--	--	8010/8020	--	--	Sampled 14 wells Performed statistical analysis. 1995 Annual Report included as Appendix F.
4/96, 7/96	pH	Cd, Cr, Cu	X	--	--	8010/8020	--	--	Sampled 14 wells Performed statistical analysis.

TABLE 2-1
PHIBRO-TECH, INC.
Groundwater Monitoring Program Summary
(continued)

Sampling Event	Indicator Parameters	Trace Metals	Hexavalent Chromium	Chloride	Nitrate	Volatile Organics	Appendix IX	1,4-Dioxane	Comments
10/96	pH	Cd, Cr, Cu	X	--	--	8010/ 8020	--	--	Sampled 14 wells Performed statistical analysis. 1996 Annual Report included as Appendix F.
1/97	pH	Cd, Cr, Cu	X	--	--	8260, MTBE	--	--	Sampled 14 wells Performed statistical analysis.
4/97, 7/97	pH	Cd, Cr, Cu	X	--	--	8260	--	--	Sampled 14 wells Performed statistical analysis.
10/97	pH	Cd, Cr, Cu	X	--	--	8260	--	--	Sampled 14 wells Performed statistical analysis. 1997 Annual Report included as Appendix F.
1/98	pH	Cd, Cr, Cu	X	--	--	8260	--	--	Sampled 14 wells Performed statistical analysis. Hexavalent Chromium by Method 7196 in all wells; and by Method 218.6 in wells MW-4A, MW-14S, MW-15S, and MW-15D.
4/98, 7/98	pH	Cd, Cr, Cu	X	--	--	8260	--	--	Sampled 14 wells Performed statistical analysis.
10/98	pH	Cd, Cr, Cu	X	--	--	8260	--	--	Sampled 14 wells Performed statistical analysis. 1998 Annual Report included as Appendix F.
1/99, 4/99, 7/99, 10/99, 01/00, 04/00, 10/00, 04/01	pH	Cd,Cr,Cu	X*	--	--	8260	_	--	Sampled 14 wells Performed statistical analysis. Monitoring and reporting frequency changed from quarterly to semi-annually in April 2000. Monitoring and reporting frequency changed back from semi-annually to quarterly in April 2001.

TABLE 2-1
PHIBRO-TECH, INC.
Groundwater Monitoring Program Summary
(continued)

Sampling Event	Indicator Parameters	Trace Metals	Hexavalent Chromium	Chloride	Nitrate	Volatile Organics	Appendix IX	1,4-Dioxane	Comments
07/01, 10/01	pH	Cd,Cr,Cu	X*	--	--	8260	_	MW-015 MW-04 MW-09 MW-11 MW-06D MW-15D	Sampled 14 wells Performed statistical analysis. 2001 Annual Report included as Appendix G (10/01) 1,4-Dioxane sampled in selected wells (MW-01S, MW-04, MW-04A, MW-06D, MW-11, and MW-15D) during 07/01 and 10/01.
1/02, 4/02	PH	Cd,Cr, Cu	X	-	-	8260	-	-	Sampled 14 wells Performed statistical analysis.

Appendix III Parameters - As, Ba, Cd, Cr, F, Pb, Hg, N, Se, Ag, Endrin, Lindane, Methoxychlor, Toxaphene, 2,4-D, 2,4,5-TP (Silvex), Radium, Gross Alpha & Beta, Turbidity, coliform bacteria.
Water Quality Parameters - Cl, Fe, Mn, Phenols, Na, SO4
Indicator Parameters (IP) - TOX, TOC, pH, EC (quadruplicate)
624 - Volatile organics analysis
601/602 - Purgeable halocarbons/aromatics analysis
8010/8020 - Purgeable halocarbons/aromatic analysis
8260 - Purgeable halocarbons/aromatic analysis
MTBE - Methyl tertiary butyl ether
Appendix IX Parameters - See Appendix F in the October 1990 Quarterly Sampling Report for a complete listing of parameters.
* - Analytical method changed from EPA 7196 to 7199 beginning with the October 2000 Sampling Event

Section 3
Laboratory Testing

STL Analytical of Santa Ana, California provided testing of the 21-groundwater samples collected during the April 2002 monitoring event. Fourteen monitoring well samples, two blind duplicate samples from MW-04 and MW-09, and one DI sample were collected and submitted to STL for analysis of purgeable halocarbons/aromatics (EPA Method 8260). In addition, three equipment blank samples (EB) were submitted for analysis of the above parameters. Three travel blanks (TB) were also submitted each day to STL for analysis of purgeable halogenated/aromatic organics.

The April 2002 groundwater analytical results are discussed in Section 6 and summarized in Tables 6-1 and 6-2. Quality assurance analytical results (duplicates, equipment blanks, and travel blanks) are discussed in Section 4.0 and summarized in Table 4-1. Individual analytical reports for April 2002 are contained in Appendix C.

Section 4
Quality Assurance

To verify the accuracy and validity of analytical data, certain quality assurance procedures were implemented. The field and laboratory quality assurance results were checked for deviations from the Quality Assurance (QA) guidelines discussed in the RFI Work Plan.

4.1 Field Quality Assurance

The field QA procedures included the use of duplicate samples, equipment blanks, travel blanks, and the use of chain-of-custody forms. The results of the QA analyses have been compiled in Table 4-1. Detection limits of parameters analyzed are shown in the analytical reports contained in Appendix C. Relative Percent Difference (RPD) between original and duplicate samples is also listed in Table 4-1.

4.1.1 Duplicate Samples

Standard accepted practice is to submit one duplicate sample for analysis for approximately every tenth sample collected; a ratio of 1 to 10. During the April 2002 round of sampling, duplicate samples were collected from monitoring wells MW-04 and MW-09. The duplicate samples were submitted to the analytical laboratory as blind samples, and were designated MW-35 and MW-37, respectively, on the chain of custody forms. Monitoring wells MW-04 and MW-09 were selected due to elevated concentrations of certain contaminants detected during previous sampling rounds. Analytical results for the duplicate samples for April 2002 are shown in Table 4-1.

Laboratory results for the samples collected from well MW-09 indicated original sample concentrations of TCE, PCE, 1,1-DCE, 1,1-DCA, chloroform, cis-1,2-DCE, and methylene chloride deviated from their corresponding duplicate sample concentrations by greater than 20 percent (Table 4-1). However, the concentrations are well within the same order of magnitude. No other deviations greater than 20 percent were found in any of the duplicate samples.

4.1.2 Equipment Blanks

Analytical results for the equipment blanks collected during April 2002 are shown in Table 4-1.

Equipment blanks EB-01 and EB-02 were obtained by allowing deionized water to run off the decontaminated submersible pump that was used to pump the groundwater samples for the entire April 2002 sampling event, after sampling wells MW-1D and MW-14S, respectively. The purpose of these two equipment blanks was to assure that the pump was being sufficiently decontaminated between wells. Equipment blank EB-03 was obtained by allowing the deionized water to run through a new, precleaned, disposable bailer after sampling well MW-07. The purpose of this equipment blank was to evaluate and ensure the effectiveness of factory cleaning of the disposable bailer. The samples were collected in the appropriate containers and

submitted for laboratory analysis of volatile organic compounds (EPA Method 8260), cadmium, chromium (total and hexavalent), copper, and pH. The analytical results did not indicate any compound above the method detection limits in the equipment blanks. The laboratory provided water used for the collection of the equipment blanks.

4.1.3 Travel Blanks

The detection of compounds in travel blanks is generally indicative of systematic contamination from sample transport, laboratory glassware cleaning, laboratory storage, or analytical procedures. During the April 2002 sampling event, three laboratory-prepared travel blanks (TB01 through TB-03) consisting of organic-free water were labeled and submitted to the laboratory for volatile organic compound analysis by EPA Method 8260. The travel blanks were placed inside the cooler containing samples for volatile organic compounds.

Table 4-1 shows the results of the travel blank analyses. No compounds were detected above the method detection limits.

4.1.4 Sample Control

All sample containers were labeled immediately prior to sampling with the sample identification information completed with a waterproof pen. Samples were transported under chain-of-custody and hand delivered by courier to the laboratory in ice-cooled chests. Copies of the chain-of-custody records are included in Appendix C.

4.2 Laboratory Quality Assurance

STL provides internal laboratory QA/QC results with each sample analytical report. Matrix spike, matrix spike duplicate, method blank, and duplicate control sample results are noted in the QA/QC reports. In addition, surrogate recoveries are also noted for volatile organics analyses. The laboratory QA/QC results were within acceptable limits for the April 2002 sampling. The laboratory control sample results were also within acceptable limits.

Table 4-1
Phibro-Tech, Inc.
Groundwater Analytical Results - April 2002
Field Quality Control Sample Analytical Summary

Well ID	Sample Date	Sample Type	Metals (mg/L)				VOCs (ug/L)											
			Cadmium	Chromium	Cr+6	Copper	Benzene	Toluene	Ethyl-benzene	Xylenes, Total	PCE	TCE	1,1-DCE	1,1-DCA	1,2-DCA	CFM	cis-1,2-DCE	MCL
MW-04	4/18/02		0.44	27.4	31	0.05 U	50 U	50 U	2200	170	50 U	260	57	100	50 U	50 U	86	58
		K	0.43	26.3	31	0.05 U	50 U	50 U	1900	160	50 U	260	65	100	50 U	50 U	84	60
		RPD	2.3 %	4.1 %	0 %				14.6 %	6.1 %		0 %	13.1 %	0 %			2.4 %	3.4 %
MW-09	4/18/02		0.005 U	0.16	0.14	0.025 U	2.5 U	2.5 U	2.5 U	5 U	4.2	140	33	110	64	26	11	6.9
		K	0.005 U	0.15	0.14	0.025 U	2.5 U	2.5 U	2.5 U	5 U	6	190	48	160	56	36	16	10
		RPD		6.5 %	0 %						35.3 %	30.3 %	37 %	29.6 %	13.3 %	32.3 %	37 %	36.7 %
DI	4/18/02	N					1 U	1 U	1 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
EB	4/16/02	N	0.005 U	0.01 U	0.002 U	0.025 U	1 U	1 U	1 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	4/17/02	N	0.005 U	0.01 U	0.002 U	0.025 U	1 U	1 U	1 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	4/18/02	N	0.005 U	0.01 U	0.002 U	0.025 U	1 U	1 U	1 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TB	4/16/02	TB					1 U	1 U	1 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	4/17/02	TB					1 U	1 U	1 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	4/18/02	TB					1 U	1 U	1 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U

Notes:

PCE = Tetrachloroethene; TCE = Trichloroethene; DCE = Dichloroethene; DCA = Dichloroethane; CFM = Chloroform; MCL = Methylene chloride.

U = Not detected at a concentration greater than the reporting limit shown.

Sample Type:
K = Duplicate (split) Sample
TB = Trip Blank
N = Equipment Decontamination Blank
RPD = Relative Percent Difference between original and duplicate samples (%)

Section 5
Groundwater Elevation

On April 16, 2002 prior to the initiation of well evacuation procedures, the depth to groundwater was measured in 23 of the 24 on-site monitoring wells. Groundwater elevations were calculated by subtracting the depth to static water level from the surveyed elevation of the corresponding monitoring well.

All of the monitoring well casing elevations were surveyed during the RFI and three wells (MW-04, MW-09, and MW-10) were resurveyed in January 1996 following wellhead repair. In July 1998, wellhead repairs were performed on wells MW-03, MW-06A, MW-06B, MW-06D, MW-08, MW-11, MW-12S, MW-12D, MW-13S, MW-13D, and MW-16. These wells were resurveyed during the July 1998 monitoring event. During the April 2000 monitoring event, two additional wellheads were repaired (MW-14S and MW-14D). Wells MW-14S and MW-14D were resurveyed during September 2001.

During the April 2002 sampling event, water level measurements were taken at shallow wells MW-01S, MW-03, MW-04, MW-05, MW-06B, MW-07, MW-08, MW-09, MW-10, MW-11, MW-12S, MW-13S, MW-14S, MW-15S, and MW-16. Water level measurements were also taken at deep wells MW-01D, MW-04A, MW-06D, MW-12D, MW-13D, MW-14D, and MW-15D. These wells were measured in order to evaluate the direction and gradient of groundwater flow underlying the facility and to help characterize the shallow and deep aquifer interaction. Well MW-02 was not measured due to its proximity to MW-12S. Well MW-06A was measured and found to be dry.

Table 5-1 lists the depths to water and groundwater elevations for each well sampled. Figure 5-1 shows the approximate groundwater surface elevation of the upper Hollydale Aquifer for wells screened in the shallow interval (45 to 77 feet below ground surface) using data collected during the April 2002 sampling round. The contours shown in Figures 5-1 and 5-2 were generated by D.C.A., a surface contouring software developed by Softdisk, which is commonly used in conjunction with CADD (Computer Aided Drafting and Design) to produce contour maps and other graphics.

The direction of groundwater flow in the shallow monitoring wells is approximately southwest at an average gradient of 0.40 feet per 100 feet in the western portion of the facility, where the majority of the monitoring wells are located. The gradient in the shallow wells is comparable to the January 2002 sampling event, which had a gradient of 0.39 feet per 100 feet.

Figure 5-2 shows the approximate groundwater elevation of the lower Hollydale Aquifer for wells screened in the deeper interval (78.3 to 123.5 feet below ground surface). Groundwater contours for the deeper wells follow the same general trend as those of the shallow wells, with a direction of groundwater flow towards the southwest at an average gradient of 0.40 feet per 100 feet.

With the 23 wells measured for water levels during the April 2002 sampling round, there were seven locations where a deep well was measured adjacent to a shallow well. Shallow wells are screened within the interval of 45 to 77 feet bgs. Deep wells are screened within the interval of 78.3 to 107 feet bgs, with the exception of MW-15D, which is screened from 108.5 to 123.5 feet bgs. Of the well pairs, groundwater elevations at deep wells MW-12D, MW-13D, MW-14D, and MW-15D were slightly lower (0.02 feet to 0.16 feet) than the corresponding shallow well elevations. The groundwater elevations at deep wells MW-01D, MW-04A, and MW-06D were slightly higher (0.02 feet to 0.13 feet) than the corresponding shallow well elevations. Based on these and past groundwater elevation comparisons among shallow and deep well pairs, it does not appear that a well-defined vertical gradient between shallow and deep intervals exists.

Average groundwater elevations during the April 2002 sampling event increased from the previous sampling event. Groundwater elevations increased by an average of 0.45 feet. Well MW-01S is the only well that had a decrease in groundwater elevation, decreasing by 0.03 feet. The maximum groundwater elevation increase occurred in well MW-15S, which increased by 0.62 feet.

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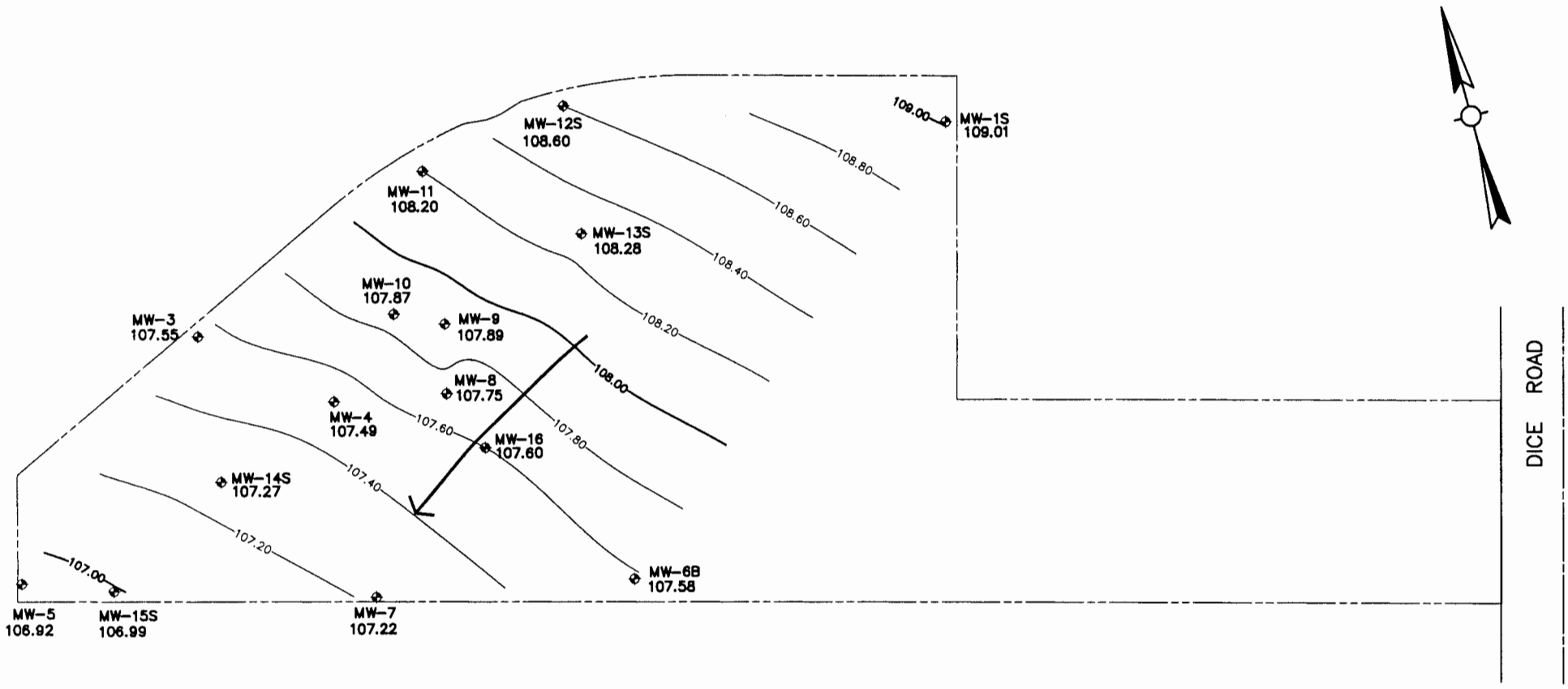

LEGEND

- PROPERTY LINE
- MONITORING WELL
- 106.92 GROUNDWATER ELEVATION (Feet Above MSL)
- 108.00 GROUNDWATER ELEVATION CONTOUR LINE (Feet Above MSL)
- GROUNDWATER FLOW DIRECTION

1" = 100'

50 0 100

PHIBRO-TECH, INC., SANTA FE SPRINGS, CA

Groundwater Elevation Contours - Shallow Wells
April 2002

CDM

Figure 5-1

DATE: Jun 10, 2002 1:51pm XREFS:
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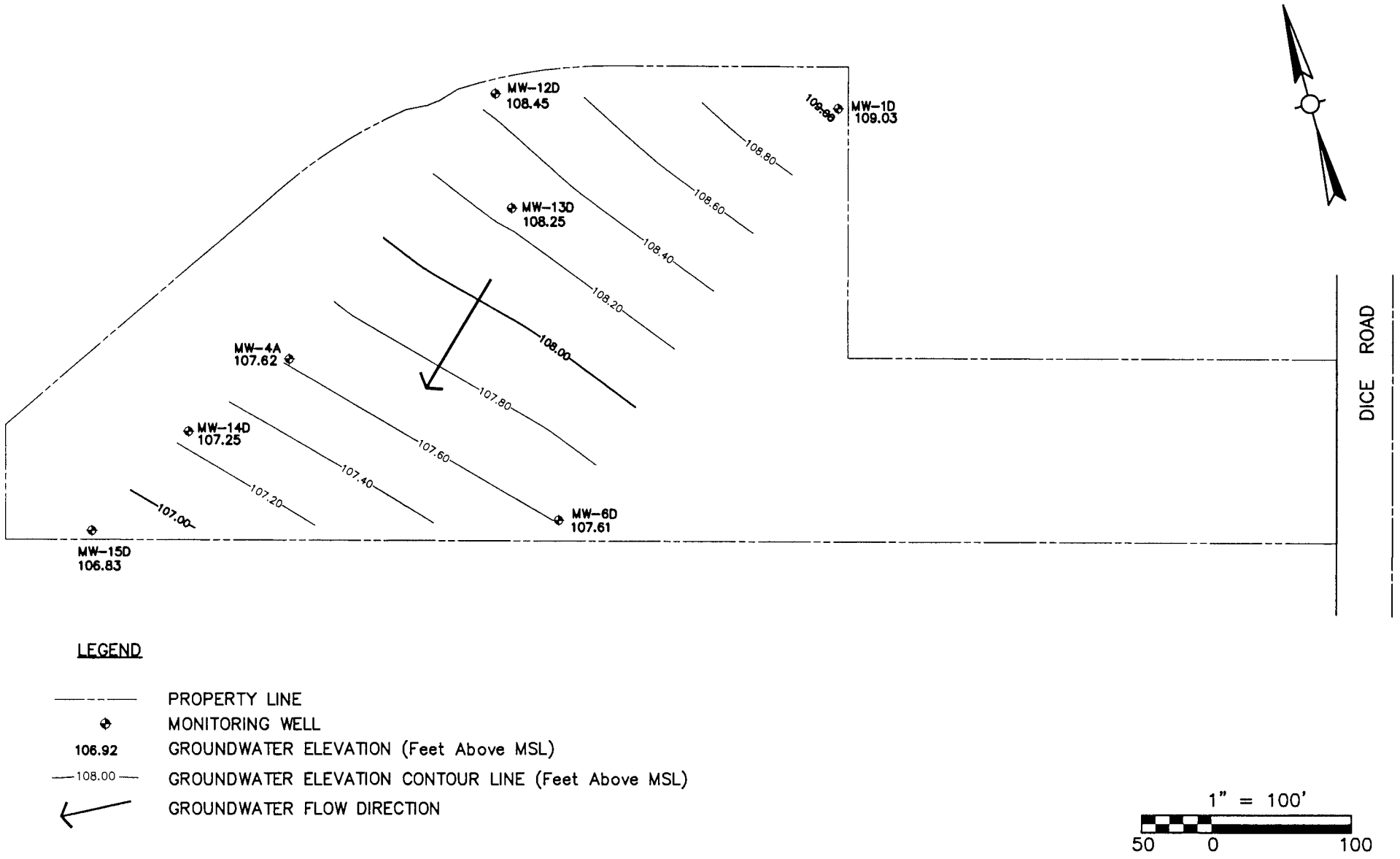


PHIBRO-TECH, INC., SANTA FE SPRINGS, CA

Groundwater Elevation Contours - Deep Wells
April 2002

CDM

Figure 5-2

TABLE 5-1
PHIBRO-TECH, INC.
April 2002 Quarterly Monitoring Well Sampling
Groundwater Elevation Data

Well No.	Well Headspace* (ppm)	Total Depth Constructed (ft) (bgs)	Total Depth Measured (ft) (bgs)	Perforated Intervals (ft)	Calculated Casing Fill (ft)	M.P. Elevation (ft)	Depth to Water (ft below MP)	Groundwater Elevation (ft above MSL) April 2002	Groundwater Elevation (ft above MSL) January 2002
1S	0.0 / 0.0	62.5	62.1	47-62.5	0.4	152.63	43.62	109.01	109.04
1D	0.0 / 0.0	94.8	95.7	79.5-94.5	---	152.60	43.57	109.03	108.91
3	15.5 / 0.0	74.1	73.1	45-75	1.0	154.75	47.20	107.55	107.14
4	16.4 / 0.0	67.5	67.6	45-75	---	152.37	44.88	107.49	107.02
4A	5.4 / 0.0	107.0	105.5	87-107	1.5	152.46	44.84	107.62	107.11
5	0.1 / 0.1	75.0	70.0	45-75	5.0	153.26	46.34	106.92	106.33
6A	0.0 / 0.0	---	28.9	10-30	---	---	---	Dry	Dry
6B	0.0 / 0.0	77.6	76.2	45-75	1.4	149.53	41.95	107.58	107.01
6D	0.0 / 0.0	95.5	90.4	79-94	5.1	150.13	42.52	107.61	107.01
7	0.0 / 0.0	71.5	71.0	45-75	0.5	149.42	42.20	107.22	106.70
8	0.8 / 0.0	71.0	69.9	41-71	1.1	150.17	42.42	107.75	107.25
9	2.8 / 0.0	73.5	72.5	44-77	1.0	152.96	45.07	107.89	107.39
10	4.6 / 0.0	75.0	74.0	45-75	1.0	153.89	46.02	107.87	107.49
11	0.3 / 0.0	75.5	73.9	55-75	1.6	155.76	47.56	108.20	107.76
12S	1.7 / 0.0	72.0	71.7	51-72	0.3	155.79	47.19	108.60	108.19
12D	0.0 / 0.0	101.0	99.6	84.5-100	1.4	155.72	47.27	108.45	108.05
13S	0.8 / 0.0	70.3	69.1	50.3-70.3	1.2	151.72	43.44	108.28	107.83
13D	2.1 / 0.0	93.3	93.4	78.3-93.3	---	151.68	43.43	108.25	107.90
14S	9.6 / 0.0	71.5	70.6	46-72	0.9	150.54	43.27	107.27	106.74
14D	0.0 / 0.0	109.0	103.8	88-103	5.2	150.60	43.35	107.25	106.70
15S	0.0 / 0.0	71.5	71.3	51.5-71.5	0.2	151.01	44.02	106.99	106.37
15D	0.0 / 0.0	123.8	123.8	108.5-123.5	0.0	150.96	44.13	106.83	106.32
16	7.7 / 0.1	62.5	61.9	42-62	0.6	150.27	42.67	107.60	107.17

M.P. = Measuring point (top of steel casing)
--- = Not measured or not calculated.
bgs = below ground surface
ppm = parts per million
MSL = mean sea level
* Measured with PID prior to sampling (casing/background).
Note: Depth to water measurements collected on April 16, 2002 prior to purging/sampling on-site wells.

Section 6
Groundwater Quality

In order to compare the analytical data with the previous sampling events (1989 through April 2001 quarterly events), historical sampling results were compiled and presented in Appendix B. The Appendix B tables summarize selected groundwater analytical parameters (hexavalent and total chromium, cadmium, copper, purgeable aromatics and trichloroethene) and groundwater elevations at shallow-well and deep-well locations sampled prior to July 2001. Analytical results for the period from July 2001 to the present are summarized in Tables B-1 and B-2 in Appendix B. Laboratory analytical reports from all wells sampled during the April 2002 sampling round are located in Appendix C.

Consistent with the results of laboratory testing performed on the groundwater samples collected since January 1989 from the on-site monitoring wells, three contaminant plumes in the Hollydale Aquifer were identified. Historically, these plumes have been present at varying concentrations and lateral extent. One small plume, consisting primarily of chromium, has been aligned in a northeasterly to southwesterly direction in the vicinity of wells MW-04 and MW-14S. The second, consisting of purgeable aromatics, has also been aligned in a northeasterly to southwesterly direction with the highest concentrations generally found in wells MW-04, MW-14S, and MW-09. The third plume consists of TCE and related parameters with highest concentrations generally detected in wells MW-04, MW-09, MW-11, and MW-14S.

6.1 Halogenated Volatile Organic Compounds

Table 6-1 shows the analytical results for deep and shallow wells sampled during April 2002. TCE was the primary compound detected, with miscellaneous other halogenated organics also detected. The table also shows, for comparison purposes, maximum contaminant limits (MCLs) where established.

Trichloroethene (TCE)

TCE was detected in all 14 of the groundwater monitoring wells sampled. The highest concentration of TCE detected was 1,300 µg/L in well MW-11, an increase from the result of 630 µg/L in January 2002. Analyses of samples from five recent previous consecutive sampling events (April 2000, October 2000, April 2001, October 2001, and April 2002) indicated all time highs for this well, which is located along the northern boundary of the site. The TCE detected in well MW-11 likely originated from an off-site up gradient source. The second highest concentration of TCE detected was 280 µg/L in well MW-03, an increase from the result of 220 µg/L in January 2002. Of the 14 wells sampled, ten wells contained concentrations of TCE that exceeded the MCL of 5 µg/L.

Concentrations of TCE detected in shallow and deep wells are shown on Figures 6-1 and 6-2, respectively. Compared to January 2002, TCE concentrations increased in

seven of the ten shallow wells sampled. Excluding MW-11 and MW-03, TCE concentrations ranged from 2.9 µg/L (MW-15S) to 190 µg/L (MW-09). The only shallow wells that had decreases in TCE concentration compared to January 2002 were MW-01S and MW-09.

TCE concentrations increased in three of the four deep wells sampled, compared with the January 2002 results. Deep-well TCE concentrations ranged from 3.3 µg/L to 71 µg/L in April 2002.

A review of the historical analytical results contained in Appendix B reveals that, with minor exceptions, TCE has historically been detected in all on-site monitoring wells, including the up gradient wells. Past discussions with Department of Health Services (now Cal EPA DTSC) and Regional Water Quality Control Board staff indicate that TCE and other halogenated organic are generally recognized as regional groundwater contaminants.

Other Halogenated Organics

During the April 2002 sampling, other halogenated organics were detected in most of the on-site wells (Table 6-1). Halogenated organics detected in April 2002 other than TCE included 1,1-dichloroethane (1,1-DCA), 1,2-DCA, 1,1,1-trichloroethane (1,1,1-TCA), tetrachloroethene (PCE), carbon tetrachloride, cis-1,2-dichloroethene (cis-1,2-DCE), trans-1,2-dichloroethene, chloroform, and methylene chloride. Wells with significant concentrations of halogenated organic compounds included MW-04, MW-07, MW-09, MW-11, and MW-15S.

1,1-DCA was detected in eight of the wells sampled, with concentrations ranging from 34 µg /l in MW-07 to 360 µg/L in MW-11. The MCL for 1,1-DCA is 5 µg/L. Compared with January 2002, concentrations of 1,1-DCA increased in all wells that had detectable concentrations.

1,2-DCA was also present above reporting limits in six of the sampled wells, with concentrations ranging from 1.2 µg /l in MW-01S to 190 µg/L in MW-09 and 160 µg/L in MW-16. The MCL for 1,2-DCA is 0.5 µg/L.

Detectable concentrations of cis-1,2-DCE occurred in eight of the wells sampled in April 2002. Overall, concentrations ranged from 1.0 µg /l in MW-01S to 86 µg/L in MW-04. The MCL for cis-1,2-DCE is 6 µg/L.

The compounds PCE, 1,1,1-TCA, carbon tetrachloride, chloroform and methylene chloride were also detected in several wells. Detections of these other halogenated organic compounds are assumed to be related to the TCE plume. The presence of trans-1,2-dichloroethene could be a result of anaerobic degradation of TCE.

6.2 Aromatic Volatile Organic Compounds

According to PTI personnel, organic chemicals have not historically been used on-site in any of the production processes. Two 10,000-gallon underground storage tanks

(containing diesel and gasoline), however, were located in the approximate center of the facility, due east of the drum wash area. During tank removal activities in July 1989, petroleum hydrocarbon contamination was discovered in the tank excavation. The RFI report indicated that petroleum hydrocarbon contamination was not detected at depths below 30 feet near the former tank locations. Although they have not been used on-site, aromatic compounds have been historically detected in groundwater underlying the facility. The primary aromatic organic compounds of concern are toluene, ethylbenzene and total xylenes, which vary in both concentration and lateral extent. The RFI report indicated that these compounds appeared to be migrating onto the subject property from the property to the north. According to Los Angeles County Department of Public Works files, leaks from tanks containing purgeable aromatic compounds with subsequent groundwater contamination are known to have occurred at the property to the north of PTI.

Aromatic volatile organic compound results for April 2002 are presented in Table 6-1. Concentrations of total aromatics (BTEX) for the shallow wells are illustrated on Figure 6-3. Historic sampling results indicate that purgeable aromatic contamination originated off-site to the north and has migrated onto the subject property. During previous sampling events, elevated concentrations of toluene, ethylbenzene and xylenes were detected in MW-11 and MW-03 along the northern perimeter of the property.

Since approximately July 1991, elevated concentrations of these compounds have been detected in wells MW-04 and MW-14S, indicating that the plume may be migrating down gradient. Total BTEX concentrations in MW-04 began to gradually decrease in October 1998 until January 2000, at which time MW-04 had a total BTEX concentration of 11.1 µg/L. Concentrations began to increase in October 2000 until October 2001, when the total BTEX concentrations reached 6,500 µg/L. January concentrations declined to 680 µg/L, and April 2002 results indicate that total BTEX concentrations in MW-04 have again increased to 2,370 µg/L.

In addition, relatively high BTEX concentrations have also been detected in well MW-09 beginning in January 1992. Ethylbenzene was detected at a concentration of 440 µg/L in MW-09 in July 2001 and 8.1 µg/L in October 2001. However, BTEX compounds in well MW-09 were below reporting limits in both January and April 2002.

Results of the April 2002 sampling indicate that the highest concentrations of total BTEX were detected in well MW-04 (Figure 6-3) at a concentration of 2,370 µg/L. These results indicate an increase of one order-of-magnitude compared with previous results at MW-04. The second highest total BTEX concentration of 300 µg/L was detected in well MW-11.

Benzene

Of the 14 wells sampled in April 2002, only well MW-15D had a benzene concentration (1.1 µg/L) above the reporting limit. In January 2002, none of the wells

had concentrations above the reporting limit of 1.0 µg/L. The most recent occurrence of benzene above its reporting limit was in October 2001. Historical evidence indicates that benzene is not a contaminant of concern for the facility.

Toluene

During the April 2002 sampling, toluene was not detected above the reporting limit in any of the 14 wells sampled. Toluene occurs in most of the wells on site, but only sporadically. Significant toluene concentrations were detected during July 1990 to July 1991 (MW-11), July 1991 to January 1992 (MW-04), July 1992 to July 1993 (MW-09), and July 1994 to January 1995 (MW-09). Concentrations were also detected at location MW-04 during January 1993. Historically, elevated ethylbenzene and total xylene concentrations have generally been associated with elevated toluene concentrations.

Ethylbenzene

During the April 2002 sampling round, ethylbenzene was detected at concentrations greater than the reporting limit in MW-04 and MW-11. The highest concentration of ethylbenzene (2,200 µg/L) was detected in MW-04, which was an increase from 680 µg/L in January 2002. This concentration exceeds the MCL, which is 700 µg/L. The second highest concentration of ethylbenzene (300 µg/L) was detected in MW-11. Results for MW-11 from the January 2002 sampling event indicated an ethylbenzene concentration of 1,900 µg/L. Since the last sampling event, ethylbenzene concentrations decreased in wells MW-11 and MW-14S, and increased in well MW-04. Well MW-14S had the largest ethylbenzene concentration as of the previous sampling event, but decreased to below the reporting limit as of the April 2002 sampling event.

Total Xylenes

Total xylenes were detected above the reporting limit in only two wells during the April 2002 sampling event. In wells MW-04 and MW-14S, concentrations of total xylenes were 170 and 3.8 µg/L, respectively. Results from the previous event indicated only wells MW-11 and MW-14S contained detectable xylenes at concentrations of 530 and 1,100 µg/L, respectively.

6.3 1,4-Dioxane

Table 6-1 includes the analytical results for 1,4-Dioxane during the July and October 2001 sampling events. Groundwater samples from wells MW-01S, MW-04, MW-06D, MW-09, MW-11 and MW-15D were analyzed for 1,4-Dioxane. The highest concentration (140 µg/L) was detected during the October 2001 sampling event in well MW-01S, which represents the site's shallow up gradient well. 1,4-Dioxane analysis has not been performed since the October 2001 event.

6.4 Inorganic and Miscellaneous Parameters

Table 6-2 shows the analytical results for inorganic parameters (cadmium, total and hexavalent chromium, copper, and pH) for sampling events since July 2001.

Hexavalent Chromium (Cr^{+6})

During the April 2002 sampling, hexavalent chromium was analyzed using EPA Method 7199 with a method detection limit of 0.002 mg/L and a reporting limit of 0.002 mg/L. Prior to the April 2001 sampling event, hexavalent chromium was analyzed using EPA Method 7196 with a reporting limit of 0.02 mg/L.

Hexavalent chromium was detected in 7 of the 14 wells sampled. Well MW-04 contained the highest concentration of hexavalent chromium at 31 mg/L. Well MW-04 also contained the highest concentration in the previous event, at 18 mg/L. The other six wells contained hexavalent chromium concentrations that ranged from 0.0027 mg/L (MW-06D) to 0.14 mg/L (MW-09) during April 2002. Figure 6-4 shows the concentrations of hexavalent chromium detected in the shallow wells during April 2002.

The water purged from MW-04 has typically been bright yellow in color since CDM began sampling the wells on a quarterly basis in January 1989. During the April 2002 sampling round, the color of water from MW-04 was again noted as yellow.

Figure 6-5 shows the concentrations of hexavalent chromium and groundwater elevations in MW-04 over time. The concentrations of hexavalent chromium at MW-04 decreased from July 1989 (120 mg/L) to July 1993 (1.8 mg/L), while groundwater elevations increased. Since July 1993, hexavalent chromium concentrations have fluctuated up and down while groundwater elevations have remained fairly constant. Historically, hexavalent chromium has been detected (detection limit was 0.02 mg/L) in four other wells other than MW-04, although the highest concentration has always been detected at MW-04.

At MW-14S from October 1990 to January 1993, hexavalent chromium concentrations generally decreased, with analytical non-detections reported for the six sampling rounds before October 1994. Since October 1994, detections have been sporadic, ranging from 0.022 to 0.11 mg/L during 15 of the last 28 sampling events.

Hexavalent chromium concentrations decreased in MW-09 between October 1989 and January 1991. Then between January 1992 and July 1998 hexavalent chromium concentrations were not detected above the reported detection limits (except for a trace amount detected in October 1991). Between October 1998 and April 2002, eight of the thirteen sampling events indicated detectable concentrations of hexavalent chromium in well MW-09.

Total Chromium (Cr[T])

Total chromium was detected above its reporting limit in four monitoring wells during the April 2002 sampling event. The highest concentration was detected in well MW-04 at a concentration of 27.4 mg/L, which is a slight increase from 24.4 mg/L in January 2002. Total chromium was also detected in MW-09, MW-14S, and MW-16 at concentrations ranging from 0.012 mg/L to 0.16 mg/L. Figure 6-6 shows the concentrations of total chromium detected in shallow monitoring wells during

April 2002. Figure 6-7 shows the concentrations of total chromium and corresponding groundwater elevations in MW-04 over time. Comparison of historical total chromium data with present data (Appendix B) indicates that total chromium concentrations, like those of hexavalent chromium, generally decreased from January 1989 to July 1993, and have fluctuated up and down since July 1993. Historically, the highest total chromium concentrations have been detected in MW-04. Sporadic detections of total chromium close to the detection limit have occurred historically in nearly all-shallow wells on site.

Cadmium (Cd)

During the April 2002 sampling event, cadmium was detected at concentrations greater than the reporting limit in one well. Cadmium was detected in well MW-04 at a concentration of 0.44 mg/L, which is a slight decrease from 0.41 mg/L in January 2002.

Previous concentrations in MW-04 have ranged from 0.028 mg/L in January 1989 to 0.86 mg/L in July 1992. Figure 6-8 shows the cadmium concentrations detected in the on-site wells during April 2002. Figure 6-9 shows the concentrations in MW-04 of cadmium and corresponding groundwater elevations in MW-04 over time. As shown on Figure 6-9, cadmium concentrations have fluctuated considerably (i.e., from non-detectable at a detection limit of 0.005 mg/L during July 1993 to 0.86 mg/L during July 1992) since July 1990.

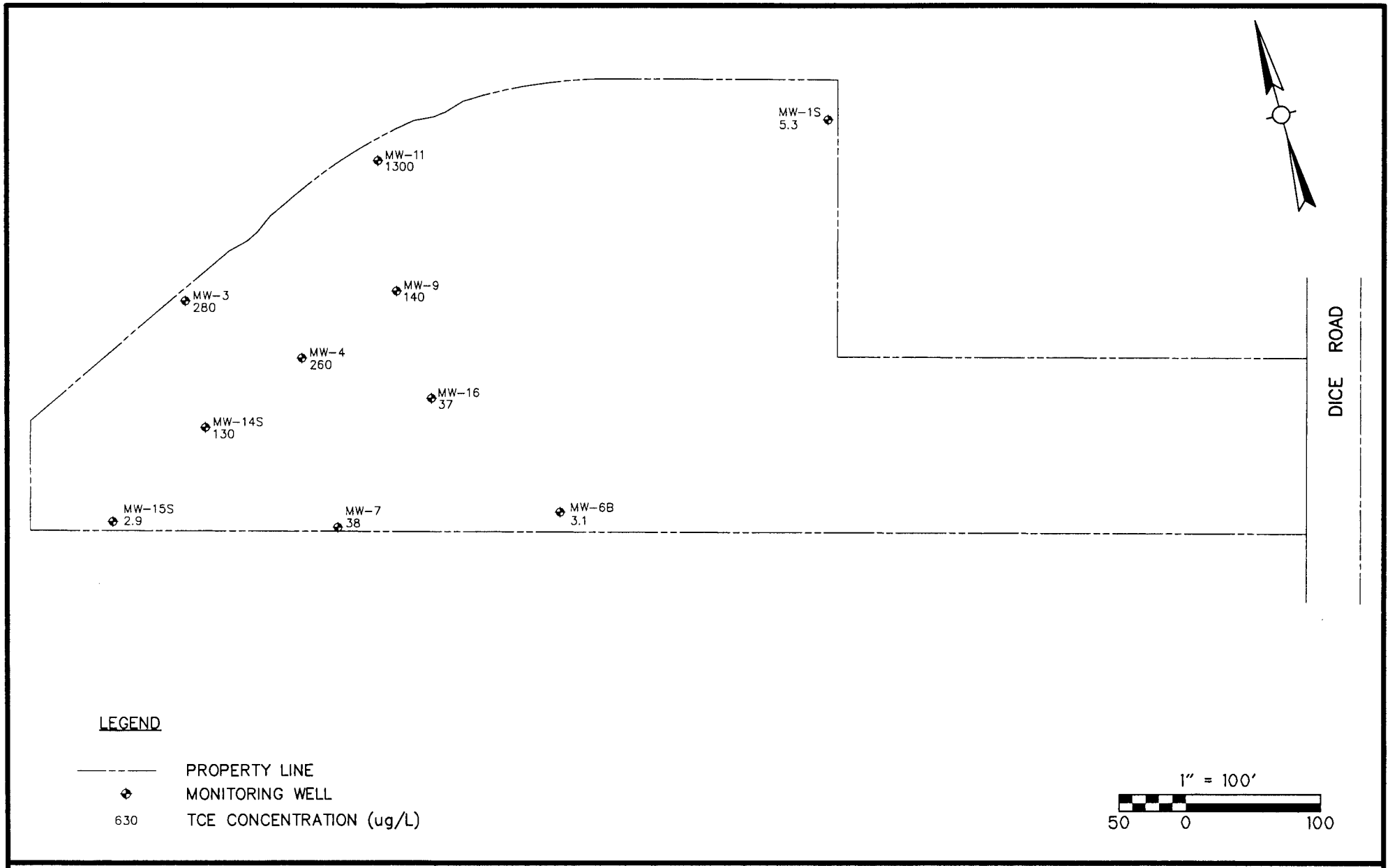
Cadmium has been detected consistently only in well MW-04. Historically, cadmium has been detected once at 0.01 mg/L in MW-01 during July 1989. Cadmium was detected in MW-14S at concentrations ranging from 0.005 mg/L to 0.018 mg/L between October 1990 through July 1991 and at a concentration of 0.0055 mg/L during July 1995. Cadmium was also detected in MW-15S at concentrations close to the detection limit from July 1991 to January 1993. Detected concentrations in MW-15S ranged from 0.005 mg/L in July 1992 to 0.02 mg/L during October 1991.

Copper (Cu)

Copper was detected at concentrations greater than the reporting limit only in wells MW-07 and MW-14S, at concentrations of 0.057 and 0.029 mg/L, respectively. Neither of these concentrations exceed the secondary MCL of 1.3 mg/L. Figure 6-10 shows the copper concentrations detected in the on-site wells during April 2002. Historically, with the exception of well MW-14S, concentrations of copper above the secondary MCL have not been detected in on-site monitoring wells.

pH

Groundwater samples from all wells were measured for pH in the field during purging activities, and also by the analytical laboratory on the samples submitted for analysis. Field pH measurements were recorded in the field logbook during well purging. In April 2002, the field measurements of pH generally correlated with the values shown in Table 6-2, which range from 6.8 to 7.5.



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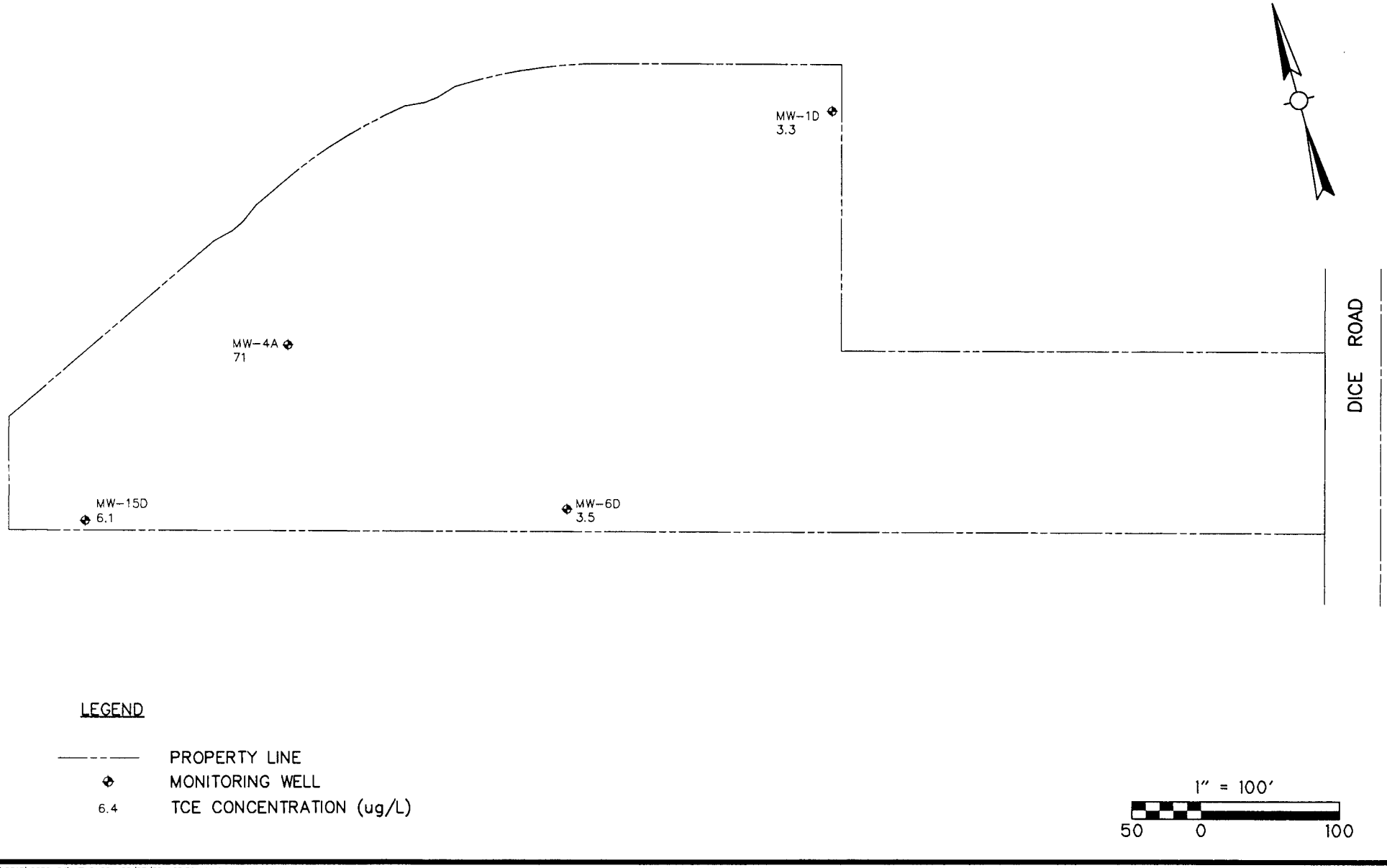
PHIBRO-TECH, INC., SANTA FE SPRINGS, CA

TCE Concentrations - Shallow Wells
April 2002

CDM

Figure 6-1



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PHIBRO-TECH, INC., SANTA FE SPRINGS, CA

TCE Concentrations - Deep Wells
April 2002

CDM

Figure 6-2

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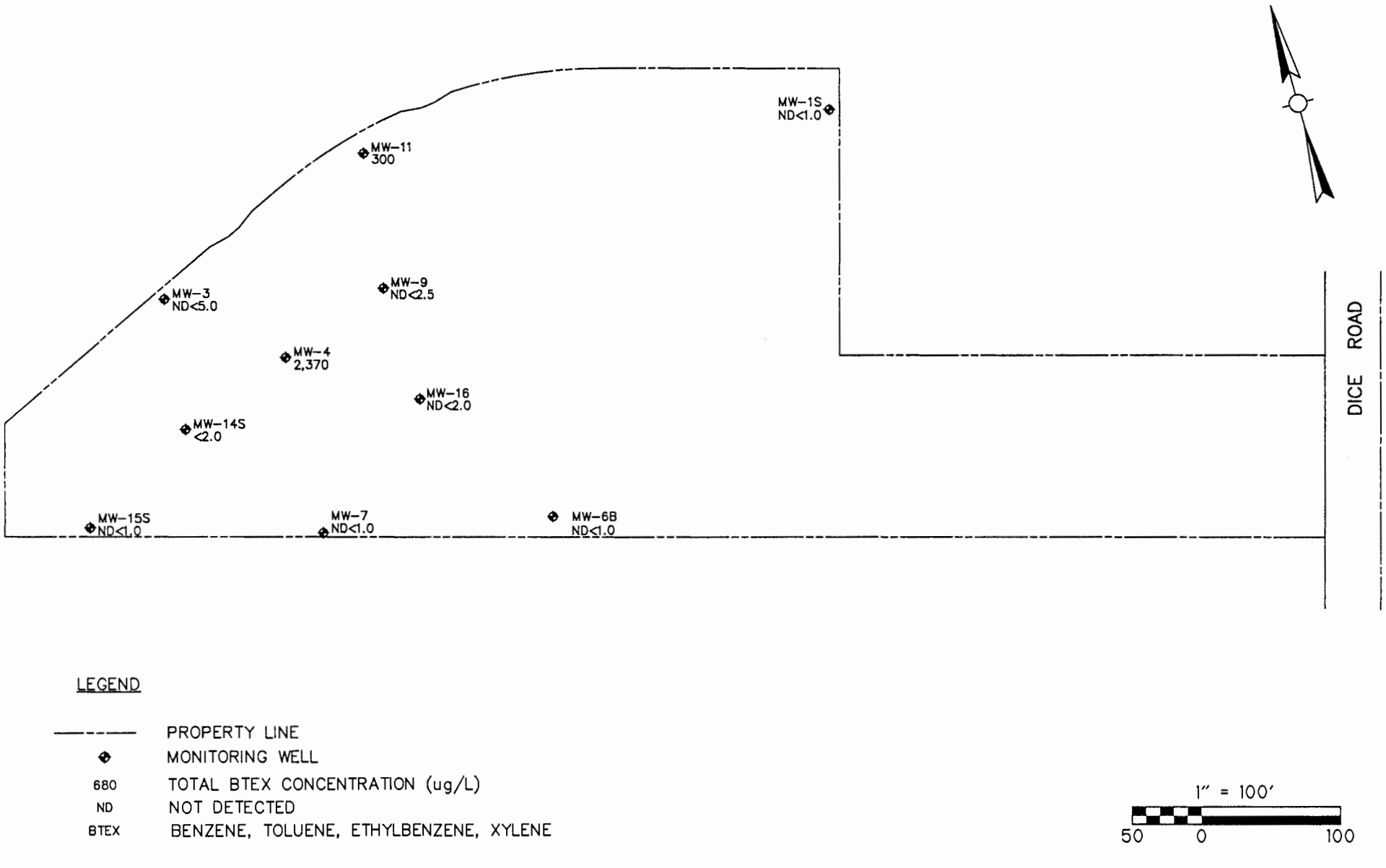
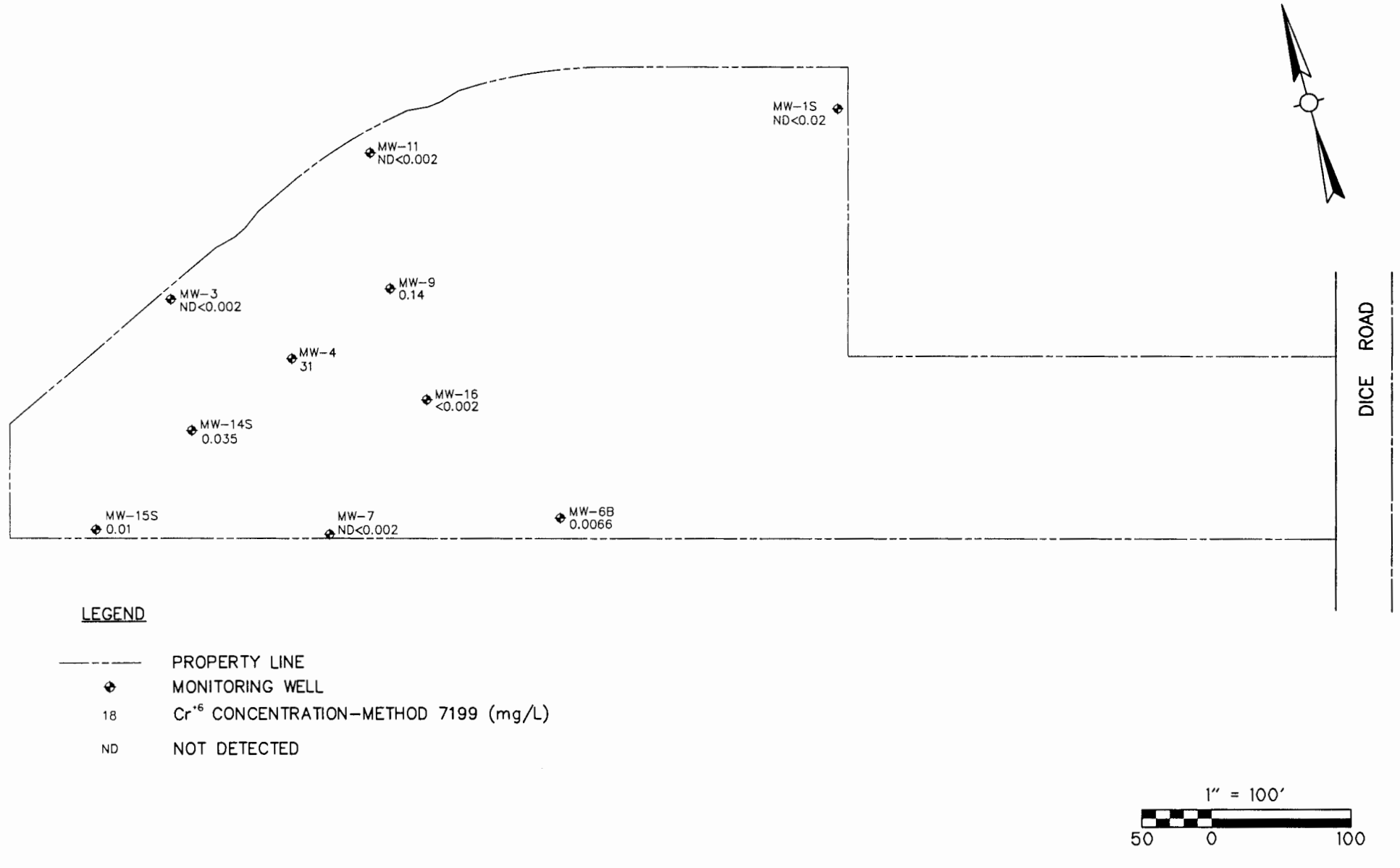


PHIBRO-TECH, INC., SANTA FE SPRINGS, CA

Total BTEX Concentrations - Shallow Wells
April 2002

CDM

Figure 6-3



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PHIBRO-TECH, INC., SANTA FE SPRINGS, CA

Hexavalent Chromium Concentrations - Shallow Wells
April 2002

CDM

Figure 6-4

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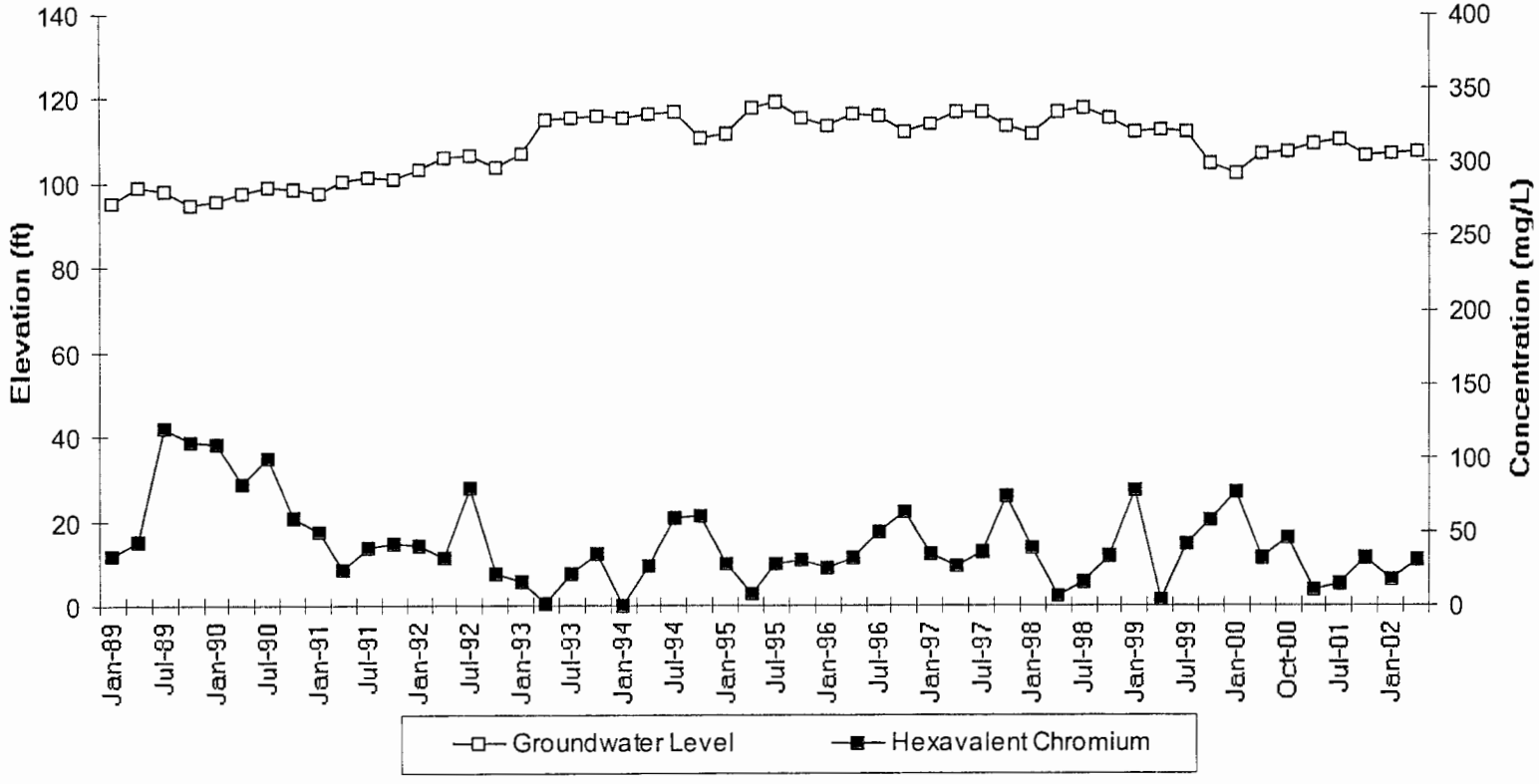
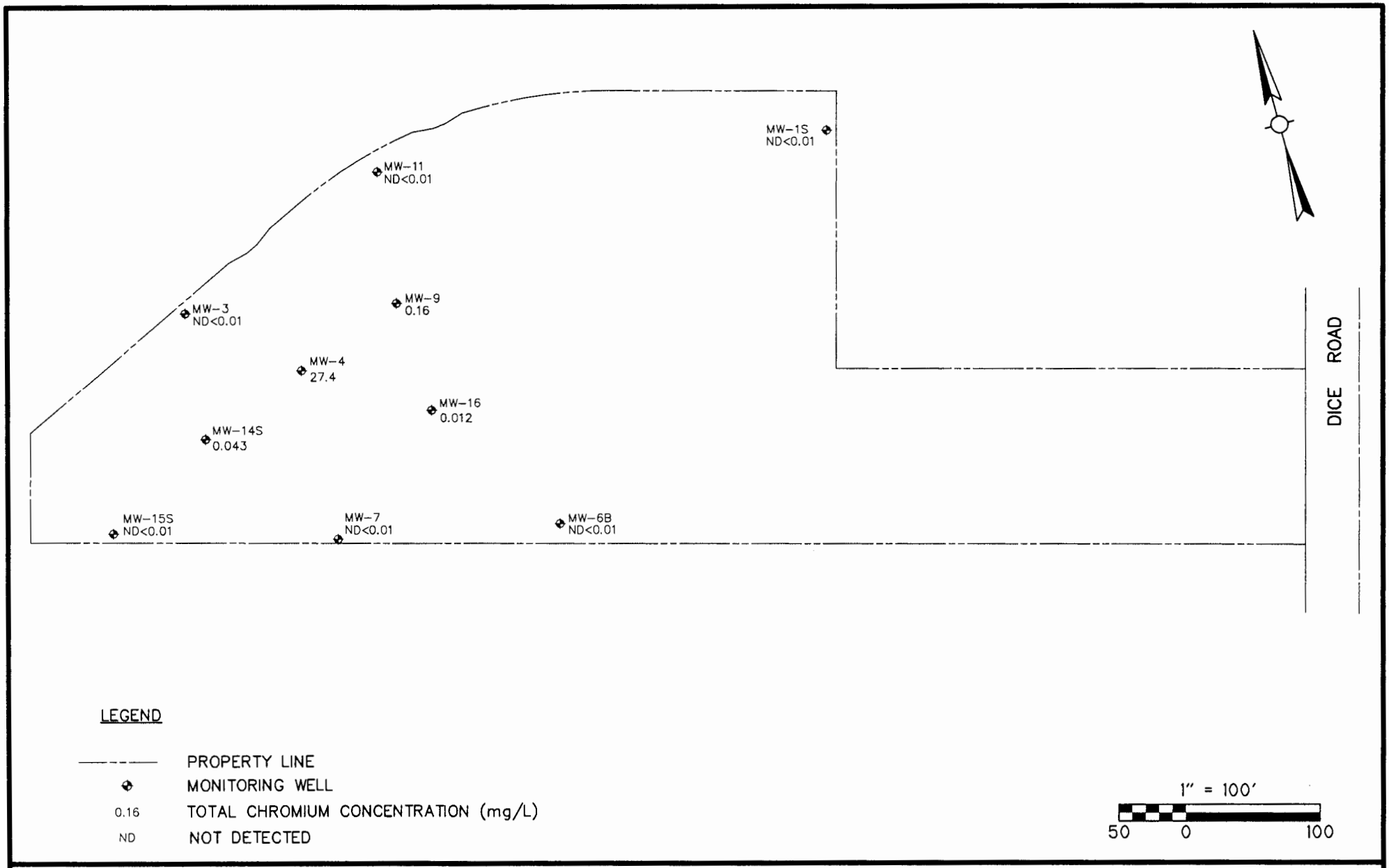


PHIBRO-TECH, INC., SANTA FE SPRINGS, CA

Hexavalent Chromium Concentration
Groundwater Elevation MW-04
January 1989 - April 2002

CDM
environmental engineers, scientists,
planners, & management consultants

Figure 6-5



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PHIBRO-TECH, INC., SANTA FE SPRINGS, CA

Total Chromium Concentrations - Shallow Wells
April 2002

CDM

Figure 6-6

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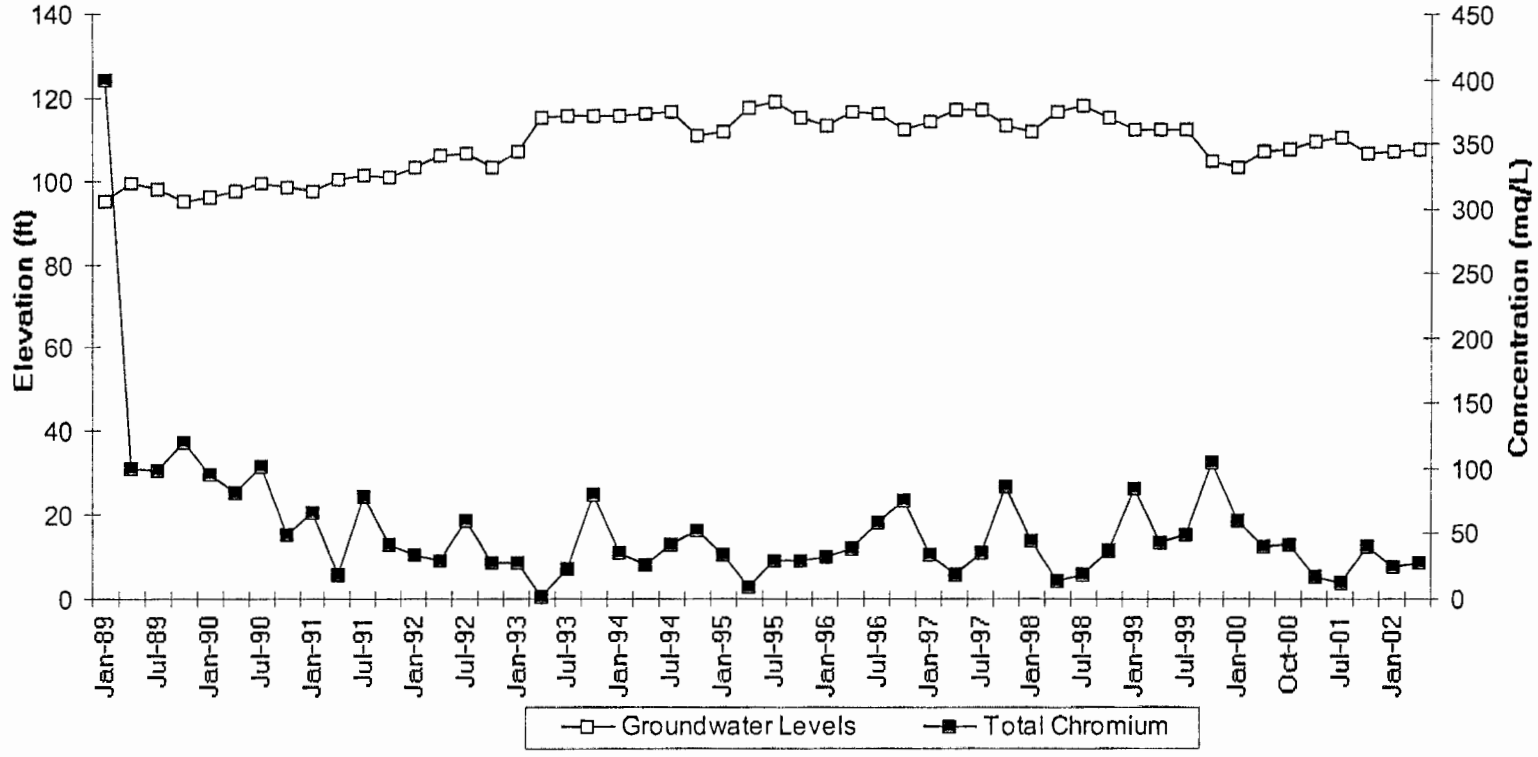
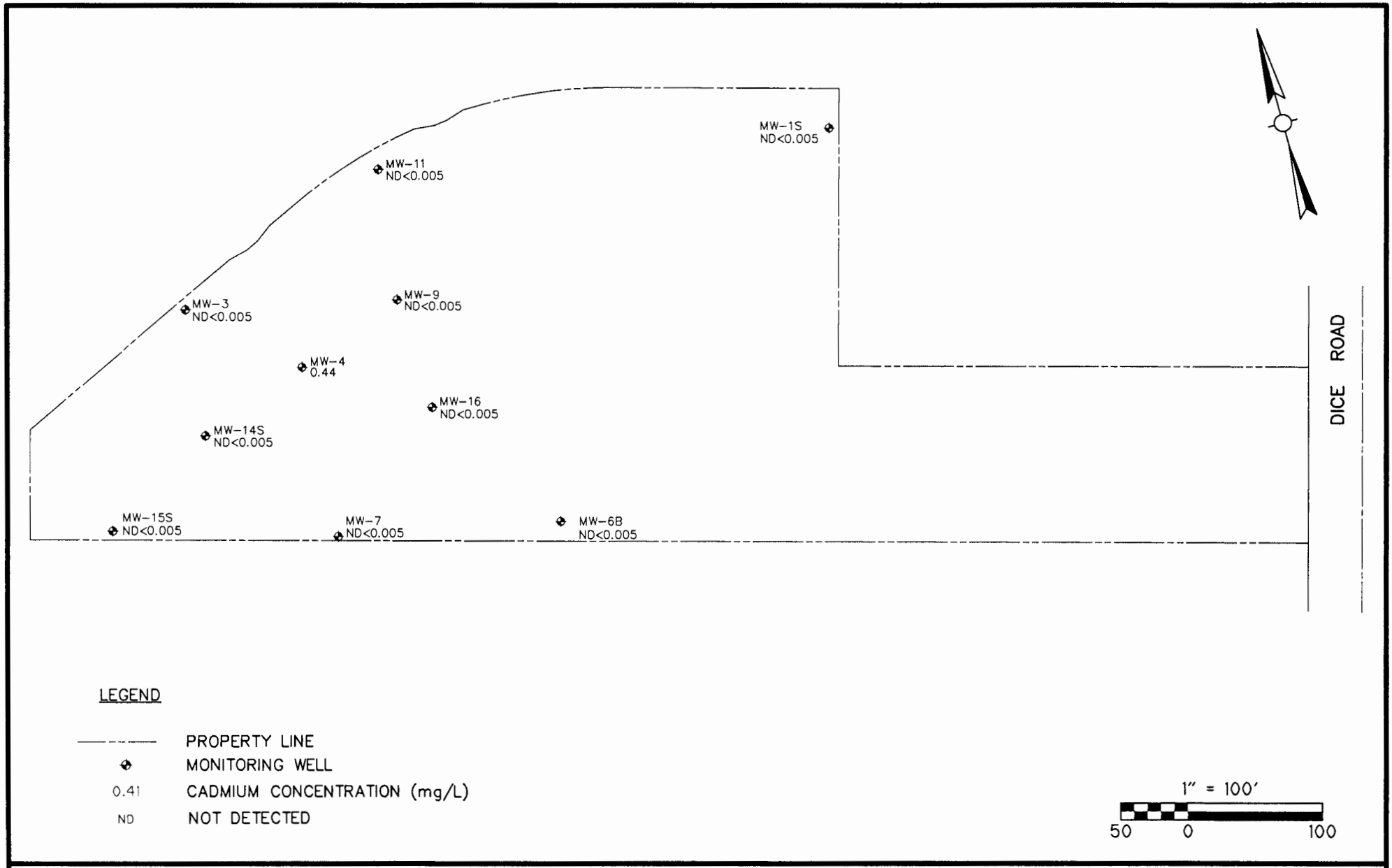


PHIBRO-TECH, INC., SANTA FE SPRINGS, CA

Total Chromium Concentration
Groundwater Elevation MW-04
January 1989 - April 2002

CDM
environmental engineers, scientists,
planners, & management consultants

Figure 6-7



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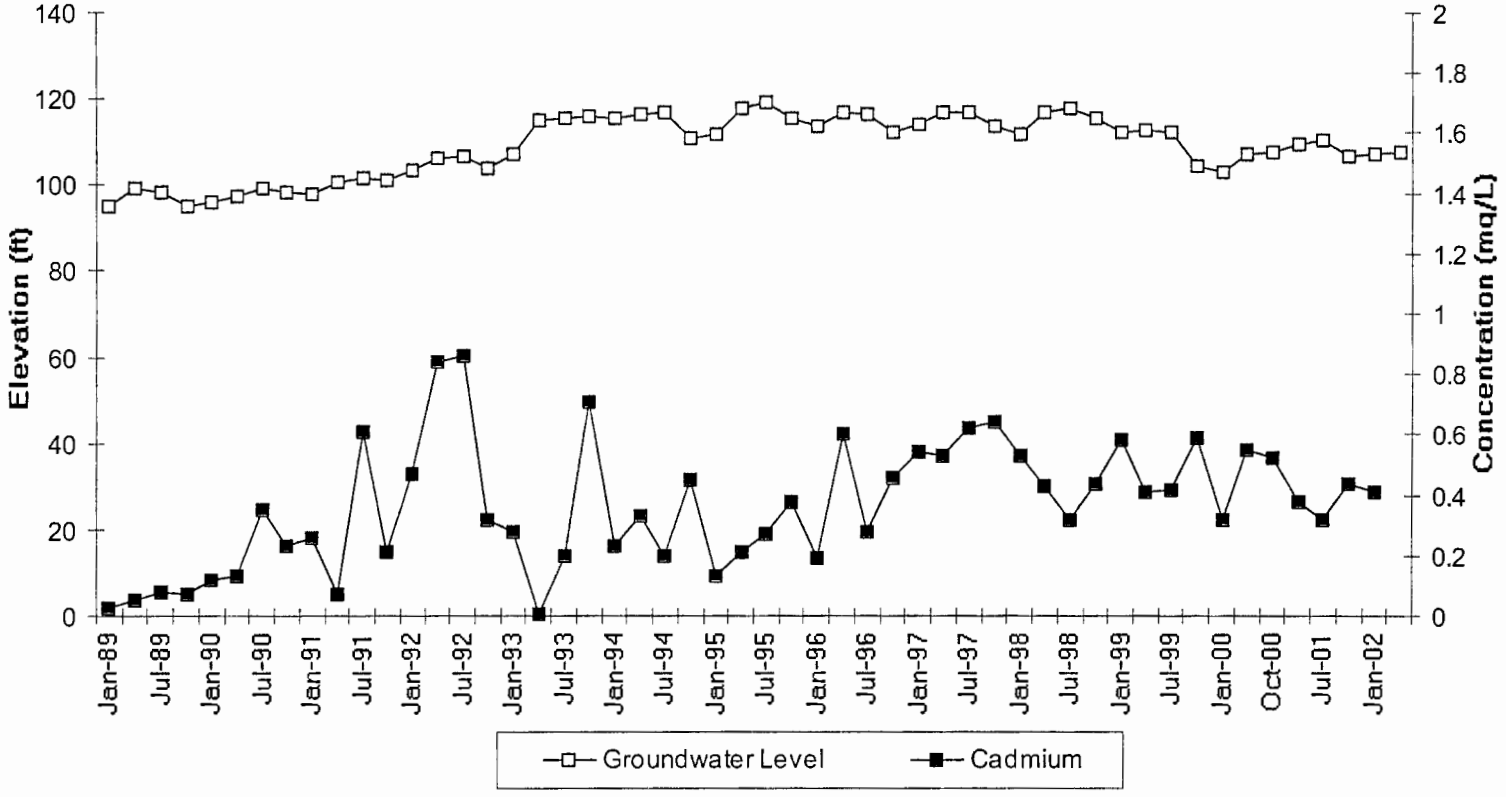
PHIBRO-TECH, INC., SANTA FE SPRINGS, CA

Cadmium Concentrations - Shallow Wells
April 2002

CDM

Figure 6-8

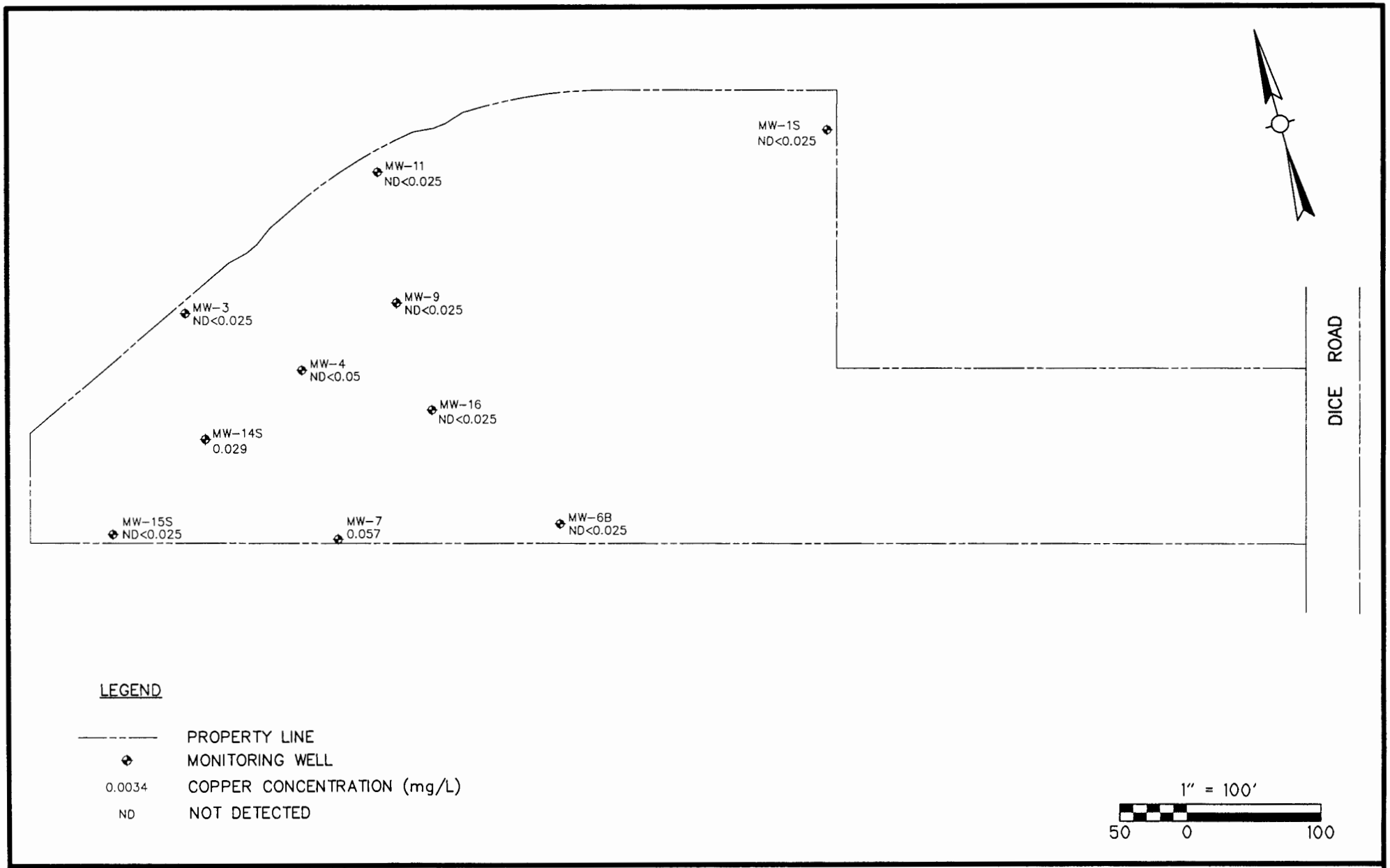


PHIBRO-TECH, INC., SANTA FE SPRINGS, CA

Cadmium Concentration
Groundwater Elevation MW-04
January 1989 - April 2002

CDM
environmental engineers, scientists,
planners, & management consultants

Figure 6-9



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PHIBRO-TECH, INC., SANTA FE SPRINGS, CA

Copper Concentrations - Shallow Wells
April 2002

CDM

Figure 6-10

Table 6-1
Phibro-Tech, Inc.
Groundwater Analytical Results - April 2002
Volatile Organic Compounds (VOCs) and 1,4-Dioxane Analytical Summary

Well Number	Sample Date	Sample Type	Benzene (1)	Toluene (150)	Ethyl-benzene (700)	Xylenes, Total (1,750)	PCE (5)	1,1,1-TCA (200)	TCE (5)	1,1-DCE (6)	1,1-DCA (5)	1,2-DCA (0.5)	CCl4 (0.5)	CFM (100)	cis-1,2-DCE (6)	trans-1,2-DCE (10)	MCL (5)	1,4-Dioxane (3#)
MW-01D	7/17/01		1 U	1 U	1 U	1 U	1 U	1 U	2.1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
	10/16/01		1.5	1 U	1 U	1.5	5.3	1 U	3.5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
	1/15/02		1.6	1 U	1 U	1 U	2.5	1 U	1.8	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
	4/16/02		1 U	1 U	1 U	2 U	3.9	1 U	3.3	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
MW-01S	7/17/01		1 U	1 U	1 U	1 U	1 U	1 U	10	1 U	1.5	1 U	1 U	1 U	5.6	1 U	1 U	130
	10/16/01		1 U	1 U	1 U	1 U	1 U	1 U	13	1 U	1.9	1.1	1 U	1 U	6.7	1 U	1 U	140
	1/15/02		1 U	1 U	1 U	1 U	1.6	1 U	7	1 U	1 U	1.3	1 U	1 U	1.2	1 U	1 U	
	4/16/02		1 U	1 U	1 U	2 U	1.2	1 U	5.3	1 U	1 U	1.2	1 U	1 U	1	1 U	1 U	
MW-03	7/17/01		1 U	1 U	1 U	1 U	2.3	1 U	41	6	5.1	1 U	29	20	1 U	1 U	1 U	
	10/17/01		5 U	5 U	5 U	5 U	5.1	5 U	290	35	35	5 U	39	35	5 U	5 U	5 U	
	1/16/02		2.5 U	2.5 U	2.5 U	2.5 U	5.6	2.5 U	220	28	30	2.5 U	33	30	2.5 U	2.5 U	2.5 U	
	4/16/02		5 U	5 U	5 U	10 U	5 U	5 U	280	35	44	5 U	36	38	5 U	5 U	5 U	
MW-04	7/18/01		50 U	50 U	2400	50 U	50 U	50 U	74	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	16
		K	50 U	50 U	2400	50 U	50 U	50 U	76	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	16
	10/18/01		50 U	50 U	3700	50 U	50 U	50 U	170	50 U	73	50 U	50 U	50 U	65	50 U	50 U	37
		K	50 U	50 U	2800	50 U	50 U	50 U	220	50 U	90	50 U	50 U	50 U	81	50 U	59	36
	1/17/02		10 U	10 U	680	10 U	10 U	10 U	130	31	55	160	10 U	10 U	63	10 U	20	
		K	10 U	10 U	720	10 U	10 U	10 U	140	32	58	160	10 U	10 U	70	10 U	24	
	4/18/02		50 U	50 U	2200	170	50 U	50 U	260	57	100	50 U	50 U	50 U	86	50 U	58	
		K	50 U	50 U	1900	160	50 U	50 U	260	65	100	50 U	50 U	50 U	84	50 U	60	
MW-04A	7/18/01		1 U	1 U	1 U	1 U	2.7	1 U	44	13	56	1 U	1 U	2.4	4.4	1.1	1 U	
	10/17/01		1 U	1 U	1 U	1 U	2	1 U	22	6.2	25	1 U	1 U	1.1	1.7	1 U	1 U	0.95 U
	1/16/02		1 U	1 U	1 U	1 U	1.7	1 U	3.5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
	4/17/02		2 U	2 U	2 U	4 U	3.6	2 U	71	18	93	2 U	2 U	4.4	7.3	2 U	2 U	
MW-06B	7/18/01		1 U	1 U	1 U	1 U	1 U	1 U	3.7	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
	10/17/01		1 U	1 U	1 U	1 U	1 U	1 U	4.6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
	1/16/02		1 U	1 U	1 U	1 U	1 U	1 U	5.1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	

Table 6-1
Phibro-Tech, Inc.
Groundwater Analytical Results - April 2002
Volatile Organic Compounds (VOCs) and 1,4-Dioxane Analytical Summary

Well Number	Sample Date	Sample Type	Benzene (1)	Toluene (150)	Ethyl-benzene (700)	Xylenes, Total (1,750)	PCE (5)	1,1,1-TCA (200)	TCE (5)	1,1-DCE (6)	1,1-DCA (5)	1,2-DCA (0.5)	CCl4 (0.5)	CFM (100)	cis-1,2-DCE (6)	trans-1,2-DCE (10)	MCL (5)	1,4-Dioxane (3#)
MW-06B	4/17/02		1 U	1 U	1 U	2 U	1 U	1 U	3.1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
MW-06D	7/18/01		1 U	1 U	1 U	1 U	1 U	1 U	3.4	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.96 U
	10/17/01		1 U	1 U	1 U	1 U	1.1	1 U	4.6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.95 U
	1/16/02		1 U	1 U	1 U	1 U	1.1	1 U	6.6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
	4/17/02		1 U	1 U	1 U	2 U	1 U	1 U	3.5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
MW-07	7/18/01		2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	84	13	76	140	2.5 U	2.5 U	21	2.7	2.5 U	
	10/18/01		2 U	2 U	2 U	2 U	2 U	2 U	160	16	78	27	2 U	2.8	36	4.8	2 U	
	1/17/02		1 U	1 U	1 U	1 U	1.4	1 U	15	1.2	8.7	15	1 U	1 U	2.1	1 U	1 U	
	4/18/02		1 U	1 U	1 U	2 U	1	1 U	38	4.1	34	52	1 U	1 U	7.9	1.1	1 U	
MW-09	7/19/01		5 U	5 U	440	25	5 U	5 U	110	26	88	68	5 U	16	11	5 U	6.8	18
		K	5 U	5 U	390	22	5 U	9.8	130	33	110	64	5 U	19	13	5 U	8.2	13
	10/18/01		5 U	5 U	8.1	5 U	6.5	8.8	440	89	260	240	5 U	110	15	5 U	69	75
		K	5 U	5 U	33	5 U	5 U	5 U	340	64	160	250	5 U	65	7.6	5 U	68	88
	1/17/02		2.5 U	2.5 U	2.5 U	2.5 U	4.4	3.6	200	43	89	140	2.5 U	35	5.3	2.5 U	14	
		K	2.5 U	2.5 U	2.5 U	2.5 U	4.2	3.8	200	44	91	150	2.5 U	36	5.3	2.5 U	15	
	4/18/02		2.5 U	2.5 U	2.5 U	5 U	4.2	12	140	33	110	64	2.5 U	26	11	2.5 U	6.9	
		K	2.5 U	2.5 U	2.5 U	5 U	6	20	190	48	160	56	2.5 U	36	16	2.5 U	10	
MW-11	7/17/01		5 U	5 U	5 U	5 U	5 U	5 U	400	30	67	5 U	5 U	9.9	9	5 U	5 U	5.1
	10/18/01		25 U	25 U	90	122	25 U	27	1500	98	410	25 U	25 U	50	51	25 U	25 U	12
	1/17/02		25 U	31	1900	530	25 U	25 U	630	44	120	25 U	25 U	25 U	54	25 U	25 U	
	4/18/02		25 U	25 U	300	50 U	25 U	27	1300	89	360	25 U	25 U	44	66	25 U	25 U	
MW-14S	7/19/01		1 U	1 U	1 U	1 U	1.2	1 U	35	5.5	7.4	3.5	2.2	2.2	2.1	1 U	1 U	
	10/17/01		2 U	2 U	2.4	2 U	2.4	2 U	170	39	56	6.4	22	23	5.2	2 U	2 U	
	1/16/02		50 U	50 U	2700	1100	50 U	50 U	91	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	
	4/17/02		2 U	2 U	2 U	3.8	2 U	2 U	130	30	41	13	18	18	5.3	2 U	2 U	
MW-15D	7/19/01		1 U	1 U	2.5	1 U	1.8	1 U	2.8	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.95 U
	10/17/01		2.2	1 U	1 U	1 U	2.4	1 U	6.7	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.95 U

Table 6-1
Phibro-Tech, Inc.
Groundwater Analytical Results - April 2002
Volatile Organic Compounds (VOCs) and 1,4-Dioxane Analytical Summary

Well Number	Sample Date	Sample Type	Benzene (1)	Toluene (150)	Ethyl-benzene (700)	Xylenes, Total (1,750)	PCE (5)	1,1,1-TCA (200)	TCE (5)	1,1-DCE (6)	1,1-DCA (5)	1,2-DCA (0.5)	CCl4 (0.5)	CFM (100)	cis-1,2-DCE (6)	trans-1,2-DCE (10)	MCL (5)	1,4-Dioxane (3#)
MW-15D	1/16/02		1 U	1 U	1 U	1 U	8	1 U	6.4	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
	4/17/02		1.1	1 U	1 U	2 U	1.6	1 U	6.1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
MW-15S	7/19/01		1 U	1 U	1 U	1 U	1.4	1 U	5.1	1 U	1 U	11	2.1	4	1 U	1 U	1 U	
	10/17/01		1 U	1 U	1 U	1 U	1.2	1 U	2.8	1 U	1 U	8.2	2	3.5	1 U	1 U	1 U	
	1/16/02		1 U	1 U	1 U	1 U	1.1	1 U	2.7	1 U	1 U	8.6	1.4	2.9	1 U	1 U	1 U	
	4/17/02		1 U	1 U	1 U	2 U	1.1	1 U	2.9	1 U	1 U	3	2.9	4	1 U	1 U	12	
MW-16	7/19/01		2.5 U	2.5 U	2.7	2.5 U	2.5 U	2.5 U	26	7.3	72	160	2.5 U	2.5 U	7.2	2.5 U	2.5 U	
	10/18/01		2 U	2 U	41	2 U	2 U	2 U	34	13	130	49	2 U	2 U	14	2.8	2 U	
	1/17/02		2 U	2 U	2 U	2 U	2 U	2 U	31	11	100	39	2 U	2 U	8.3	2 U	2 U	
	4/18/02		2 U	2 U	2 U	4 U	2 U	2 U	37	10	110	90	2 U	2 U	6.5	2 U	2 U	

Notes:

PCE = Tetrachloroethene; TCE = Trichloroethene; TCA = Trichloroethane; DCE = Dichloroethene; DCA = Dichloroethane; CFM = Chloroform; MCL = Methylene chloride; and CCl4 = Carbon tetrachloride.

California Maximum Contaminant Levels (MCLs) are shown in parenthesis. MCL shown for chloroform is the sum of trihalomethane isomers

= California Action Level.

Samples analyzed by EPA Method 8260.

All concentrations are reported in micrograms per liter (ug/L).

Only compounds detected in one or more samples are listed.

U = Not detected at a concentration greater than the reporting limit shown.

Sample Type:

K = Split sample

Table 6-2
Phibro-Tech, Inc.
Groundwater Analytical Results - April 2002
Metals and pH Analytical Summary

Well Number	Sample Date	Sample Type	pH	Cadmium (0.005)	Chromium (0.05)	Cr (+6)	Copper (1.3)
MW-01D	7/17/01		7.3	0.005 U	0.01 U	0.0055	0.025 U
	10/16/01		7.4	0.005 U	0.01 U	0.002 U	0.025 U
	1/15/02		7.5	0.005 U	0.01 U	0.002 U	0.025 U
	4/16/02		7.5	0.005 U	0.01 U	0.002 U	0.025 U
MW-01S	7/17/01		6.6	0.005 U	0.01 U	0.002 U	0.025 U
	10/16/01		6.8	0.005 U	0.01 U	0.0062	0.025 U
	1/15/02		7.1	0.005 U	0.01 U	0.02 U	0.025 U
	4/16/02		7.1	0.005 U	0.01 U	0.002 U	0.025 U
MW-03	7/17/01		7	0.005 U	0.01 U	0.002 U	0.025 U
	10/17/01		7.1	0.005 U	0.01 U	0.002 U	0.025 U
	1/16/02		7.2	0.005 U	0.01 U	0.002 U	0.025 U
	4/16/02		7.1	0.005 U	0.01 U	0.002 U	0.025 U
MW-04	7/18/01		6.9	0.32	12.6	15	0.025 U
		K	6.8	0.31	11.9	14	0.025 U
	10/18/01		6.9	0.44	39.8	32	0.05 U
		K	6.8	0.4	28.9	33	0.05 U
	1/17/02		6.7	0.41	24.4	18	0.05 U
		K	6.9	0.35	18.9	18	0.025 U
	4/18/02		6.8	0.44	27.4	31	0.05 U
		K	6.8	0.43	26.3	31	0.05 U
MW-04A	7/18/01		7.2	0.005 U	0.01 U	0.0055	0.025 U
	10/17/01		7.5	0.005 U	0.01 U	0.0077	0.025 U
	1/16/02		5.9	0.005 U	0.01 U	0.0052	0.025 U
	4/17/02		7.3	0.005 U	0.01 U	0.0068	0.025 U
MW-06B	7/18/01		7.2	0.005 U	0.01 U	0.0053	0.025 U
	10/17/01		7.5	0.005 U	0.01 U	0.0049	0.025 U
	1/16/02		7.4	0.005 U	0.01 U	0.0051	0.025 U
	4/17/02		7.4	0.005 U	0.01 U	0.0066	0.025 U
MW-06D	7/18/01		7.3	0.005 U	0.01 U	0.0024	0.025 U
	10/17/01		7.6	0.005 U	0.01 U	0.002 U	0.025 U
	1/16/02		7.4	0.005 U	0.01 U	0.002 U	0.025 U
	4/17/02		7.5	0.005 U	0.01 U	0.0027	0.025 U
MW-07	7/18/01		6.6	0.005 U	0.01 U	0.002 U	0.037
	10/18/01		6.7	0.01 U	0.02 U	0.002 U	0.073
	1/17/02		7.2	0.005 U	0.01 U	0.002 U	0.034
	4/18/02		7.1	0.005 U	0.01 U	0.002 U	0.057
MW-09	7/19/01		7	0.005 U	0.085	0.076	0.025 U

Table 6-2
Phibro-Tech, Inc.
Groundwater Analytical Results - April 2002
Metals and pH Analytical Summary

Well Number	Sample Date	Sample Type	pH	Cadmium (0.005)	Chromium (0.05)	Cr (+6)	Copper (1.3)
MW-09	7/19/01	K	7	0.005 U	0.082	0.085	0.025 U
	10/18/01		6.9	0.005 U	1.3	1.1	0.025 U
		K	6.9	0.005 U	1.4	1.1	0.025 U
	1/17/02		7.1	0.005 U	0.16	0.28	0.025 U
		K	7.1	0.005 U	0.15	0.23	0.025 U
	4/18/02		7.1	0.005 U	0.16	0.14	0.025 U
		K	7.1	0.005 U	0.15	0.14	0.025 U
MW-11	7/17/01		6.8	0.005 U	0.01 U	0.002 U	0.025 U
	10/18/01		6.7	0.005 U	0.01 U	0.002 U	0.025 U
	1/17/02		7.1	0.005 U	0.01 U	0.002 U	0.025 U
	4/18/02		6.8	0.005 U	0.01 U	0.002 U	0.025 U
MW-14S	7/19/01		7.1	0.005 U	0.025	0.0046	0.025 U
	10/17/01		7.2	0.005 U	0.14	0.002 U	0.042
	1/16/02		7.4	0.005 U	0.01 U	0.002 U	0.025 U
	4/17/02		7.2	0.005 U	0.043	0.035	0.029
MW-15D	7/19/01		7.3	0.005 U	0.013	0.0081	0.025 U
	10/17/01		7.6	0.005 U	0.01 U	0.002 U	0.025 U
	1/16/02		7.6	0.005 U	0.01 U	0.0081	0.025 U
	4/17/02		7.5	0.005 U	0.01 U	0.002 U	0.025 U
MW-15S	7/19/01		7.2	0.005 U	0.01 U	0.0074	0.025 U
	10/17/01		7.5	0.005 U	0.01 U	0.0088	0.025 U
	1/16/02		7.5	0.005 U	0.011	0.0091	0.025 U
	4/17/02		7.4	0.005 U	0.01 U	0.01	0.025 U
MW-16	7/19/01		7	0.005 U	0.01 U	0.0031	0.025 U
	10/18/01		7	0.005 U	0.01 U	0.002 U	0.025 U
	1/17/02		7.2	0.005 U	0.11	0.096	0.025 U
	4/18/02		7.1	0.005 U	0.012	0.002 U	0.025 U

Notes:
California Maximum Contaminant Levels (MCLs) are shown in parenthesis. Secondary MCL is shown for copper.

All concentrations are reported in milligrams per liter (mg/L).
Metals analyzed by EPA Method 6010B, except for Cr (+6), which was analyzed by EPA Method 7199.
pH analyzed by EPA Method 9040B.
U = Not detected at a concentration greater than the reporting limit shown
Analyte not analyzed or not reported if left blank.

Sample Type:

Section 7
Statistical Evaluation

The following sections contain a statistical treatment of the monitoring data designed to determine if onsite wells have been impacted by metals, BTEX compounds or TCE. The procedures used are based on the recommendations provided in the 1989 EPA Guidance document, Statistical Analysis of Ground-water Monitoring Data at RCRA Facilities - Interim Final Guidance and in the 1992 Addendum document. In some instances, not included in the documents cited above were used. However, unrecommended techniques were only used to supplement the recommended procedures. When statistical methods outlined in the 1989 guidance document were superseded by the 1992 Addendum, the more recent recommendations were followed.

7.1 Determination of Background Upper Tolerance Limit

Overview

The upper tolerance limit (UTL) is a method that is typically used in compliance monitoring to compare downgradient wells to established maximum contaminant levels (MCLS) or alternate contaminant levels (ACLs). In short, the UTL represents the upper end of the tolerance interval, which is calculated at a specified confidence level and coverage. For instance, a UTL with 95 percent coverage and a 95 percent confidence level represents a value which, with 95 percent confidence, will be exceeded less than 5 percent of the time.

In the present evaluation, we have calculated UTLs for the background well (MW-01S) and compared this value to each individual downgradient analytical result using a confidence level and coverage of 95 percent. When onsite wells exceed the background UTL consistently, it suggests that a significant difference from background may exist. While this is not a recommended technique for detection monitoring, we have applied background UTLs as a screening tool and as a supplement to the more rigorous statistical comparisons that follow.

Methods

Inherent in the calculation of a parametric UTL is the assumption of a normal (or log normal) data distribution. One of the tests for normality recommended in the 1992 Addendum to the EPA guidance document is the probability plot. When a data set is normally distributed, the corresponding probability plot is linear. However, for the background well, the analyses have a high percentage of nondetects for most parameters. Therefore, the probability plots appear to be nonlinear (see Appendix E-3 of the October 2001 Report). Fortunately, several methods are available to adjust the mean and standard deviation (used in the calculation of the UTL) based on various treatment of nondetects that allow the use of a parametric UTL. In a parametric UTL, the magnitude of the analyses are considered, while in a nonparametric analysis, the

data is ranked from highest to lowest and the UTL is calculated from the ranks. The choice of method depends on the percentage of nondetects in the population and on comparison of special probability plots designed to test the assumptions built into each model. Parametric methods for determination of the UTL are described below. When the percentage of nondetects is above 90 percent, the UTL is calculated using a nonparametric method employing the Poisson model. In the Poisson model, detected values are treated as "rare events," such that the probability of occurrence is low, but constant. The model takes into account both the frequency of occurrence of detected values as well as the magnitude. Since the Poisson model is nonparametric, a normal or log normal data distribution is not required.

When the frequency of detect is greater than 10 percent and data are normally or log normally distributed, either the Atchison or Cohen adjustment is recommended. In the Atchison method, nondetects are assumed to equal zero, and therefore are not considered in the data distribution. In the Cohen adjustment, nondetects are assumed to have finite values between zero and the detection limit. Experience at EPA and USGS (EPA 1992) have shown that, in general, when the frequency of detect (FOD) is between 10 and 50 percent, Atchison's method is more valid; while between 50 and 90 percent FOD, Cohen's method is more valid. However, this is only a rule of thumb that should be verified periodically using the detects-only and censored probability plot method described above.

Results

The frequencies of detection for each parameter in the background well (MW-01S) is provided in Table 7-1. For hexavalent chromium, cadmium, and benzene, and toluene the FOD was less than 10 percent and the Poisson nonparametric method was used to calculate the UTL. Total chromium, copper, toluene, ethylbenzene, and total xylenes analyses were all between 10 and 50 percent FOD, suggesting that the Atchison adjustment should be employed before calculating the UTL. For trichloroethene (TCE), the data were both normally and log normally distributed (see Appendices E-2 and E-3 of the October 2001 report) and the FOD was 100 percent; therefore, no adjustment was required, and the UTL was calculated directly.

The results of the UTL calculations and the comparison with each onsite well are presented in Table 7-2. Based on the number of analyses above the UTL for each onsite well, MW-03, MW-04, MW-07, MW-09, MW-11, MW-14S, MW-15 and MW-16 appear to differ from background with respect to the BTEX compounds. MW-04, MW-09, and MW-14S also appear to differ from background with respect to total chromium and copper. Note that the comparison of background UTLs to onsite wells described above is not definitive and will only be used in conjunction with the more in-depth statistical approaches that follow.

7.2 Comparison of Background and Onsite Wells

Overview

The recommended method for comparing onsite wells to background is the analysis of variance (ANOVA). There are two types of ANOVA - parametric and nonparametric. In order to use the parametric ANOVA, the data set must be normally or log normally distributed and the group variances must be equal. For the nonparametric approach, neither normality or equal variances are required, however, slightly larger datasets are needed to use a nonparametric method compared to the parametric ANOVA. The minimum number of analyses for the nonparametric test is 9, while for the parametric test, only 6 are required (EPA 1989).

The first assumption (normal or log normal distribution) should be tested using either the Shapiro-Wilk or probability plot method when the sample size is 50 or less. In general, the Shapiro-Wilk test is much more stringent than the probability plot since the method tends to focus on the "tails" of the distribution. The Lillifors, while not recommended in the Addendum, was suggested in the Interim Final Guidance (EPA 1989) and has been included for comparative purposes.

The test for equal group variances suggested in the Addendum to the Interim Final Guidance (EPA 1992) is the box plot. In a box plot, the extent of each box represent the 25th and 75th percentiles of the data set. Therefore, a long box tends to represent a larger variance than a short box. EPA (1992) recommends using a nonparametric ANOVA if the length of the largest box is equal to or greater than three times that of the smallest box. Another suggested criteria for a parametric ANOVA is a combined FOD, for both the background and the onsite well under consideration, of greater than 50 percent.

Methods

Normality tests were performed only for TCE, since for the other parameters, the combined FOD was <50 percent, precluding the use of the parametric ANOVA method. Results of the probability plot, and Shapiro-Wilk tests are presented in Table 7-3 of the October 2001 Report, while the raw data are in Appendices E-2 and E-3, respectively (October 2001 Report). Due to the stringent nature of the Shapiro-Wilk test, less weight was given to this test than the probability plots when conflicting results were obtained. Based on Table 7-3 (October 2001 Report), the TCE data are log normal in all wells except MW-04, MW-09, and MW-04. The log normal data distribution is typical of environmental datasets where various degrees of dilution have occurred. The lack of normality or log normality precluded the use of a parametric ANOVA for wells MW-03 MW-06B, and MW-09.

In order to test the equal group variances assumption, box plots were constructed for TCE in each well (see Appendix E-4 of the October 2001 Report). The results indicate that the background box is less than 1/3 of the length of the box for well MW-6B, indicating that this well cannot be compared to background using a parametric ANOVA. However, all other wells met the equal variance requirement.

A summary of the ANOVA method used is as follows:

- MW-04, MW-11, MW-14S, MW-15S, and MW-16 for TCE - parametric ANOVA using ½ D.L. for nondetects
- All other parameters and wells - nonparametric, Kruskal Wallis Mann Whitney U Test

Note that ½ D.L. was used when the FOD was greater than 85 percent in a single well.

Results

A summary of UTL calculations is provided in Appendix F-1. The results of the parametric ANOVA and nonparametric tests are included in Appendices F-2 and -3, respectively, while a summary is provided in Table 7-3. An " R" indicates that the null hypothesis was rejected, or that the two wells are not the same, while an "A" indicates the null hypothesis was accepted. In general, the results are similar to the UTL comparisons; except well MW-16 appears to differ from background with respect to the BTEX compounds. The results for TCE were obtained using both the normal and log normal assumptions for comparative purposes. The results indicate that, regardless of the data distribution, only well MW-06B was the same as background with respect to TCE. The results have not changed since the January 2002 analysis.

Table 7-1 Percent of Total Samples in Shallow Wells Reported Above the Detection Limit Quarterly Data: January 1989 to April 2002 at Philbro-Tech, Inc.

Parameter	MW-1S	MW-3	MW-4	MW-6B	MW-7	MW-9	W-11	MW-14S	MW-15S	MW-16
Number Samples (n)	52	52	52	48	52	54	52	44	46	39
Metals (mg/L) (%)										
Hexavalent chromium	3.8	5.7	100.0	10.2	3.8	38.2	3.8	51.1	17.4	7.7
Total chromium	9.6	7.7	98.2	22.9	17.3	49.1	11.5	79.5	33.3	10.3
Cadmium	1.9	0	98.2	0	3.8	3.6	0	18.2	17.8	0
Copper	21.2	9.6	25.5	4.2	50.0	9.1	21.2	59.1	11.1	15.4
Aromatics (µg/L) (%)										
Benzene	1.9	9.6	16.4	0	17.3	5.5	0	18.2	0	0
Toluene	7.8	13.7	29.6	34.0	13.7	29.6	39.2	16.3	22.7	15.8
Ethylbenzene	25.0	51.9	87.3	43.8	40.4	61.8	84.6	75.0	53.3	74.4
Total xylenes	27.5	41.2	77.4	40.4	29.4	49.1	68.6	53.5	47.7	42.1
Halocarbons (µg/L) (%)										
Trichloroethene	100.0	96.2	94.5	100.0	100.0	94.5	96.2	100.0	97.8	100.0

% = Percent detected

Table 7-2 Definition of Upper Tolerance Levels in Background Shallow Wells Quarterly Data: January 1989 to April 2002 at Philbro-Tech, Inc.

Parameter	% Detected in Bkgd [1]	Tolerance Limit Method	Upper Tolerance Limit [2]	Upper Tolerance Limit Exceeded								
				MW-3 52 [3]	MW-4 54	MW-6B 48	MW-7 52	MW-9 54	MW-11 52	MW-14S 44	MW-15S 46	MW-16 39
Metals (mg/L)												
Hexavalent Chromium	3.8	P	1.0	-	53	-	-	9	-	1	-	-
Total Chromium	9.6	A	0.042	2	55(1)	1	2	23	-	22(1)	1	1
Cadmium	1.9	P	0.5	-	14	-	-	-	-	-	-	-
Copper	21.2	A	0.029	5 (1)	18 (10)	3 (1)	22 (2)	5 (1)	9 (1)	17	4	5
Aromatics (µg/L)												
Benzene	1.9	P	26.0	3 (3) [5]	14 (13)	-	-	10 (10)	3 (3)	2 (2)	-	1 (1)
Toluene	7.8	A	1.20	23 (16)	46 (30)	14 (1)	17 (11)	44 (28)	42(22)	20 (14)	12 (2)	26 (21)
Ethylbenzene	25.0	A	2.16	24 (7)	50 (3)	15 (1)	18 (6)	47 (14)	47 (6)	31 (1)	22	30 (3)
Total xylenes	27.5	A	4.55	18(6)	50 (10)	15(1)	11 (4)	42 (17)	39 (10)	20 (4)	11	16 (7)
Halocarbons (µg/L)												
Trichloroethene	100.0	T	20.29	41 (1)	55 (3)	10	49	54 (3)	50	40	3	36

[1] MW-1S is background shallow well, n = 52
[2] In ppm or ppb, as noted for groups
[3] Number of samples collected at corresponding well
[4] Number of samples that exceed upper tolerance level at corresponding well
[5] (6) number of samples exceeding limit that are reported as ND
- = None of samples exceeded the upper tolerance limit
P = Poisson
A = Atchison adjusted
T = Unadjusted limit

Table 7-3 Comparison of Background and Onsite Shallow Wells Quarterly Data: January 1989 to April 2002 at Phibro-Tech, Inc.

Parameter	MW-3	MW-4	MW-6B	MW-7	MW-9	MW-11	MW-14S	MW-15S	MW-16
Metals (mg/L)									
Hexavalent chromium [1]	A	R	A	A	R	A	R	A	A
Total chromium [1]	A	R	R	A	R	A	R	R	A
Cadmium [1]	A	R	A	A	A	A	A	A	A
Copper [1]	A	A	A	R	A	A	R	A	A
Aromatics (µg/L)									
Benzene [1]	R	R	A	R	R	R	R	A	R
Toluene [1]	R	R	R	R	R	R	R	A	R
Ethylbenzene [1]	R	R	R	R	R	R	R	R	R
Total xylenes [1]	R	R	A	A	R	R	R	A	R
Halocarbons (µg/L)									
Trichloroethene [2]	R [3]	R [4]/R [5]	A [3]	R [3]	R/R	R [3]	R/R	R/R	R/R

[1] Background to onsite comparison by Mann Whitney U Method, using D.L. for ND, at 95 percent confidence level

[2] Background to onsite comparison by one way ANOVA Method using 1/2 D.L. for ND

[3] Nonparametric comparison used for TCE

[4] Normal Distribution used in comparison

[5] Log normal Distribution used in comparison

A Null Hypothesis, that means are equal, is accepted

R Null Hypothesis, that means are equal, is rejected

R/R Null Hypothesis, rejected using parametric (top letter) and nonparametric (bottom letter) tests

Section 8
Assessment of Quarterly Groundwater Monitoring Program Status

In the October 1990 groundwater monitoring report, changes in the quarterly groundwater-sampling program were proposed. These changes were first implemented during the April 1991 sampling event and included reducing the number of wells sampled and parameters analyzed in each well. The current groundwater-sampling program will only be used as an interim program, until the Site conceptual model has been completed and the drat sampling and analysis plan finalized). Based on over 17 years of quarterly monitoring at the site, off-site migration of the soluble metals plume has not been observed.

The analytical parameters for the April 2002 quarterly monitoring were as follows:

Wells	Volatile Organic Compounds (EPA 8260)	Chromium, Cadmium, Copper	Hexavalent Chromium	pH
MW-01S, MW-01D	X, X	X, X	X, X	X, X
MW-03, MW-04A	X, X	X, X	X, X	X, X
MW-11 MW-06B	X, X	X, X	X, X	X, X
MW-06D, MW-07	X, X	X, X	X, X	X, X
MW-09, MW-04	X, X	X, X	X, X	X, X
MW-14S, MW-15S	X, X	X, X	X, X	X, X
MW-15D, MW-16	X, X	X, X	X, X	X, X

Beginning with the January 1997 sampling event, EPA Method 8010/8020 was replaced with EPA Method 8260. This change was requested by the analytical laboratory, which no longer performs 8010/8020 analysis. Methyl tertiary butyl ether (MTBE) analysis was performed once, in January 1997. Since there were no detections of MTBE in any of the groundwater samples, this analysis was discontinued. Starting with the October 2000 sampling event, the analytical method for hexavalent chromium was changed from EPA Method 7196 to 7199. DTSC requested that six selected wells be analyzed for 1,4-Dioxane in July 2001 and October 2001. After these two events, 1,4-Dioxane analyses was discontinued.

Statistical analysis was historically conducted annually. Beginning with the October 1993 sampling event, statistical analysis has been performed on a quarterly basis, as requested by DTSC.

During 2000, three sampling events were performed (January, April and October). Sampling and reporting frequency was changed from quarterly to semi-annual after the April 2000 sampling event. However, quarterly groundwater monitoring resumed in April 2001 at the request of DTSC1. The next quarterly event will occur in July 2002. During the July 2002 event, 14 on-site wells will be sampled and analyzed for volatile organics using EPA Method 8260, chromium, cadmium, copper, hexavalent chromium, and pH. The water levels at the 14 wells sampled, in addition to the remaining unsampled wells (with the exception of MW-02), will also be measured.

Section 9
References

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Appendix A
General Analytical Detection Limits

TABLE A-1
PHIBRO-TECH, INC.
HEAVY METALS AND INORGANICS ANALYSIS
Typical Detection Limits

Method Number	Analytical Parameter	Detection Limit	Units
EPA 6010-L	Antimony	0.06	mg/L
EPA 6010-L	Barium	0.01	mg/L
EPA 6010-L	Beryllium	0.002	mg/L
EPA 6010-L	Cadmium	0.005	mg/L
EPA 6010-L	Chromium	0.01	mg/L
EPA 6010-L	Cobalt	0.01	mg/L
EPA 6010-L	Copper	0.02	mg/L
EPA 6010-L	Lead	0.05	mg/L
EPA 6010-L	Molybdenum	0.02	mg/L
EPA 6010-L	Nickel	0.04	mg/L
EPA 6010-L	Silver	0.01	mg/L
EPA 6010-L	Thallium	0.5	mg/L
EPA 6010-L	Tin	0.1	mg/L
EPA 6010-L	Vanadium	0.01	mg/L
EPA 6010-L	Zinc	0.02	mg/L
EPA 7199	Chromium, Hexavalent	0.002	mg/L
EPA 7061-L	Arsenic	0.005	mg/L
EPA 9012	Cyanide, Total	0.01	mg/L
EPA 7470	Mercury	0.001	mg/L
EPA 300.0	Chloride	5	mg/L
EPA 300.0	Nitrate	0.2	mg/L
EPA 7741-L	Selenium	0.1	mg/L
EPA 376.2	Sulfide, as Sulfur	1.2	mg/L

TABLE A-2
PHIBRO-TECH, INC.
VOLATILE ORGANIC COMPOUNDS
Typical Detection Limits

Method Number	Analytical Parameter	Detection Limit	Units
EPA 8260	Benzene	0.5	µg/L
EPA 8260	Toluene	1.0	µg/L
EPA 8260	Ethylbenzene	1.0	µg/L
EPA 8260	Xylenes, Total	1.0	µg/L
EPA 8260	Chloromethane	1.0	µg/L
EPA 8260	Bromomethane	1.0	µg/L
EPA 8260	Vinyl Chloride	1.0	µg/L
EPA 8260	Chloroethane	1.0	µg/L
EPA 8260	Methylene Chloride	1.0	µg/L
EPA 8260	Trichlorofluoromethane	1.0	µg/L
EPA 8260	1,1-Dichloroethene	1.0	µg/L
EPA 8260	1,1-Dichloroethane	1.0	µg/L
EPA 8260	trans-1,2-Dichloroethene	1.0	µg/L
EPA 8260	Chloroform	1.0	µg/L
EPA 8260	1,2-Dichloroethane	1.0	µg/L
EPA 8260	1,1,1-Trichloroethane	1.0	µg/L
EPA 8260	Carbon Tetrachloride	1.0	µg/L
EPA 8260	Bromodichloromethane	1.0	µg/L
EPA 8260	1,2-Dichloropropane	1.0	µg/L
EPA 8260	trans-1,3-Dichloropropene	1.0	µg/L
EPA 8260	Trichloroethene	1.0	µg/L
EPA 8260	Dibromochloromethane	1.0	µg/L
EPA 8260	1,1,2-Trichloroethane	1.0	µg/L
EPA 8260	cis-1,3-Dichloropropene	1.0	µg/L
EPA 8260	2-Chloroethylvinyl ether	1.0	µg/L
EPA 8260	Bromoform	1.0	µg/L
EPA 8260	Tetrachloroethene	1.0	µg/L
EPA 8260	1,1,2,2-Tetrachloroethane	1.0	µg/L
EPA 8260	Chlorobenzene	1.0	µg/L
EPA 8260	1,2-Dichlorobenzene	1.0	µg/L
EPA 8260	1,3-Dichlorobenzene	1.0	µg/L
EPA 8260	1,4-Dichlorobenzene	1.0	µg/L

Appendix B
Historical Sampling Results

Shallow Wells
PHIBRO-TECH, INC.
Historical Results
January 1989 to July 2001

		METALS				VOLATILE ORGANIC COMPOUNDS				
Monitor Well No. / Date	Groundwater Elevation (Feet MSL)	Hexavalent Chromium (mg/L)	Total Chromium (mg/L)	Cadmium (mg/L)	Copper (mg/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl-Benzene (ug/L)	Total Xylenes (ug/L)	Trichloroethene (ug/L)
MW - 1S										
Jan-89	96.74	ND < 0.01	0.014	ND < 0.003	ND < 0.009	ND < 0.01	ND < 0.0	ND < 0.0	ND < 0.0	19
Apr-89	100.45	ND < 0.05	0.1	ND < 0.01	ND < 0.02	ND < 0.7	ND < 1.0	ND < 1.0	3.0	23
Jul-89	99.00	ND < 0.05	0.06	0.01	0.03	ND < 0.7	ND < 1.0	ND < 1.0	ND < 1.0	13
Oct-89	96.76	ND < 0.05	ND < 0.02	ND < 0.01	ND < 0.05	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	12
Jan-90	97.73	ND < 0.02	ND < 0.01	ND < 0.01	ND < 0.02	ND < 0.5	ND < 0.5	ND < 0.5	ND < 1.0	16
Apr-90	99.30	ND < 0.02	0.02	ND < 0.0050	0.02	ND < 2.5	ND < 2.5	ND < 2.5	ND < 5.0	20
Jul-90	100.83	ND < 0.02	ND < 0.01	ND < 0.01	0.03	ND < 0.5	ND < 0.5	ND < 0.5	ND < 1.0	18
Oct-90	99.81	ND < 0.02	ND < 0.01	ND < 0.0050	0.023	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	18
Jan-91	99.19	ND < 0.02	ND < 0.01	ND < 0.0050	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	26
Apr-91	101.95	ND < 0.02	ND < 0.01	ND < 0.0050	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	22
Jul-91	102.94	ND < 0.02	ND < 0.01	ND < 0.0050	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	17
Oct-91	102.33	ND < 0.02	0.01	ND < 0.0050	0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	14
Jan-92	104.60	0.10	0.0081	ND < 0.0027	0.04	ND < 1	1.5	1.2	4.3	13
Apr-92	107.28	ND < 0.02	ND < 0.01	ND < 0.0050	ND < 0.02	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	9.9
Jul-92	107.87	ND < 0.02	ND < 0.01	ND < 0.0050	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	10
Oct-92	105.53	ND < 0.02	ND < 0.01	ND < 0.0050	0.035	0.95	ND < 1.0	ND < 1.0	ND < 1.0	11
Jan-93	109.82	ND < 0.02	ND < 0.01	ND < 0.0050	ND < 0.02	ND < 0.5	2.2	1.3	5.6	9.2
Apr-93	116.01	ND < 0.02	ND < 0.01	ND < 0.0050	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	5.7
Jul-93	116.59	ND < 0.02	ND < 0.01	ND < 0.0050	ND < 0.02	ND < 0.5	1.7	1.7	4.0	11
Oct-93	116.50	ND < 0.02	ND < 0.01	ND < 0.0050	ND < 0.02	ND < 0.5	ND < 1.0	2.2	4.3	14
Jan-94	116.60	ND < 0.02	ND < 0.01	ND < 0.0050	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	9.3
Apr-94	117.10	ND < 0.02	ND < 0.01	ND < 0.0050	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	14
Jul-94	117.80	ND < 0.02	ND < 0.01	ND < 0.0050	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	7.9
Oct-94	112.23	ND < 0.02	ND < 0.01	ND < 0.0050	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	5.8	13
Jan-95	113.59	ND < 0.02	ND < 0.01	ND < 0.0050	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	5.2
Apr-95	118.78	ND < 0.02	0.0029	ND < 0.01	ND < 0.02	ND < 0.5	ND < 1.0	1.3	1.0	4.4
Jul-95	120.06	ND < 0.02	ND < 0.01	ND < 0.0050	ND < 0.02	ND < 0.5	1.2	3.5	6.1	6.2
Oct-95	116.48	ND < 0.02	ND < 0.01	ND < 0.0050	ND < 0.02	ND < 0.5	ND < 1.0	1.7	3.9	15
Jan-96	114.84	ND < 0.02	ND < 0.01	ND < 0.0050	ND < 0.02	ND < 0.5	ND < 1.0	1.7	5.1	8.4
Apr-96	118.03	ND < 0.02	ND < 0.01	ND < 0.0050	ND < 0.02	ND < 0.5	ND < 1.0	3.4	4.9	2.9
Jul-96	117.42	ND < 0.01	ND < 0.01	ND < 0.0050	ND < 0.02	ND < 0.5	ND < 1.0	2.2	3.7	9.7
Oct-96	113.85	ND < 0.01	ND < 0.01	ND < 0.0050	ND < 0.02	ND < 0.5	ND < 1.0	2.1	2.8	16
Jan-97	115.73	ND < 0.02	ND < 0.01	ND < 0.0050	0.022	ND < 0.5	ND < 1.0	ND < 1.0	2.0	6.0
Apr-97	118.21	ND < 0.02	ND < 0.01	ND < 0.0050	ND < 0.02	ND < 0.5	ND < 1.0	1.4	1.2	15
Jul-97	118.18	ND < 0.02	ND < 0.01	ND < 0.0050	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	14
Oct-97	114.82	ND < 0.02	ND < 0.01	ND < 0.0050	0.023	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	12
Jan-98	113.23	ND < 0.02	ND < 0.01	ND < 0.0050	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	12
Apr-98	118.16	ND < 0.02	ND < 0.01	ND < 0.0050	0.021	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	14
Jul-98	119.12	ND < 0.02	ND < 0.01	ND < 0.0050	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	14
Oct-98	116.57	ND < 0.02	ND < 0.01	ND < 0.0050	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	7.8
Jan-99	113.94	ND < 0.01	ND < 0.01	ND < 0.0050	ND < 0.02	ND < 0.5	ND < 1.0	2.0	ND < 1.0	10
Apr-99	114.01	ND < 0.025	ND < 0.01	ND < 0.0050	ND < 0.025	ND < 1.0	ND < 1.0	ND < 1.0	ND < 2.0	7.2
Jul-99	113.62	ND < 0.020	ND < 0.010	ND < 0.0050	0.052	ND < 1.0	ND < 1.0	ND < 1.0	ND < 1.0	9.1
Oct-99	106.70	ND < 0.010	ND < 0.010	ND < 0.0050	ND < 0.025	ND < 1.0	ND < 1.0	ND < 1.0	ND < 2.0	9.1
Jan-00	102.73	ND < 0.020	ND < 0.010	ND < 0.0050	ND < 0.025	ND < 1.0	ND < 1.0	ND < 1.0	ND < 1.0	9.9
Apr-00	108.83	ND < 0.010	ND < 0.010	ND < 0.0050	ND < 0.025	ND < 1.0	ND < 1.0	ND < 1.0	ND < 1.0	16
Oct-00	109.09	ND < 0.020	ND < 0.010	ND < 0.0050	ND < 0.025	ND < 1.0	ND < 1.0	ND < 1.0	ND < 1.0	8.9
Apr-01	109.01	ND < 0.0020	ND < 0.010	ND < 0.0050	ND < 0.025	ND < 1.0	ND < 1.0	ND < 1.0	ND < 1.0	13

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		METALS				VOLATILE ORGANIC COMPOUNDS				
Monitor Well No. / Date	Groundwater Elevation (Feet MSL)	Hexavalent Chromium (mg/L)	Total Chromium (mg/L)	Cadmium (mg/L)	Copper (mg/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl-Benzene (ug/L)	Total Xylenes (ug/L)	Trichloroethene (ug/L)
MW - 3										
Jan-89	95.02	ND < 0.01	0.014	0.003	ND < 0.009	7.4	17.0	4900.0	1500.0	74
Apr-89	99.29	ND < 0.5	0.07	ND < 0.01	ND < 0.02	ND < 50	ND < 50.0	1200.0	60.0	110
Jul-89	98.21	ND < 0.5	0.06	ND < 0.01	ND < 0.02	ND < 7	ND < 10.0	ND < 10.0	ND < 10.0	120
Oct-89	94.75	ND < 0.5	ND < 0.02	ND < 0.01	ND < 0.05	ND < 50	ND < 100.0	1600.0	150.0	ND < 100
Jan-90	95.98	ND < 0.02	ND < 0.01	ND < 0.01	ND < 0.02	ND < 5	ND < 5.0	110.0	ND < 10.0	65
Apr-90	97.72	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 50	ND < 50.0	2100.0	720.0	74
Jul-90	99.27	ND < 0.02	ND < 0.01	ND < 0.01	ND < 0.02	ND < 5	ND < 5.0	ND < 5.0	ND < 10.0	130
Oct-90	97.29	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	9	2.0	ND < 1.0	ND < 1.0	130
Jan-91	97.69	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	38
Apr-91	99.81	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	27
Jul-91	101.63	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	28
Oct-91	100.99	ND < 0.02	ND < 0.01	ND < 0.005	0.03	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	71
Jan-92	103.44	ND < 0.5	0.0081	ND < 0.0027	0.02	ND < 1	ND < 1.0	ND < 1.0	4.0	76
Apr-92	106.04	ND < 0.02	ND < 0.02	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 5.0	25
Jul-92	106.61	ND < 0.02	ND < 0.02	ND < 0.005	0.13	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	76
Oct-92	103.93	ND < 0.02	ND < 0.02	ND < 0.005	0.038	0.52	ND < 1.0	ND < 1.0	ND < 1.0	130
Jan-93	107.28	ND < 0.02	ND < 0.01	ND < 0.005	0.096	ND < 2.5	ND < 5.0	ND < 5.0	ND < 5.0	84
Apr-93	115.17	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	12
Jul-93	115.92	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	3.3	2.6	5.9	16
Oct-93	115.67	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	2.6	4.8	17
Jan-94	115.59	ND<0.02/0.4**	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	10
Apr-94	116.33	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	15
Jul-94	116.91	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	26
Oct-94	110.85	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	1.2	3.5	1.5	12.0	76
Jan-95	111.83	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	72
Apr-95	117.83	ND < 0.02	0.0023	ND < 0.001	ND < 0.02	ND < 0.5	ND < 1.0	1.3	ND < 1.0	57
Jul-95	119.20	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	2.0	5.2	8.8	9.5
Oct-95	115.45	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	1.7	3.3	30
Jan-96	113.41	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	5.1	26
Apr-96	116.73	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	2.6	3.6	46
Jul-96	116.33	ND < 0.01	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	1.8	9.0	12.0	17
Oct-96	112.45	ND < 0.01	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	5.4	6.2	21
Jan-97	114.19	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	2.6	1.1	4.2	28
Apr-97	117.13	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	4.3	2.1	3.0	13
Jul-97	117.18	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	2.5	3.7	13
Oct-97	113.60	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	0.57	ND < 1.0	1.7	1.2	24
Jan-98	111.68	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	1.3	ND < 1.0	25
Apr-98	116.82	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	18
Jul-98	118.02	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	25
Oct-98	115.40	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	24
Jan-99	112.48	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	2.3	ND < 1.0	26
Apr-99	112.49	ND < 0.025	ND < 0.01	ND < 0.005	ND < 0.025	ND < 1.0	ND < 1.0	1.1	ND < 2.0	21
Jul-99	112.31	ND < 0.020	ND < 0.010	ND < 0.0050	ND < 0.025	ND < 1.0	ND < 1.0	1.3	ND < 1.0	43
Oct-99	104.42	ND < 0.010	0.017	ND < 0.0050	ND < 0.025	ND < 5.0	ND < 5.0	200	ND < 10	150
Jan-00	100.50	ND < 0.020	ND < 0.010	ND < 0.0050	ND < 0.025	ND < 2.5	ND < 2.5	54	70	170
Apr-00	107.20	ND < 0.010	ND < 0.010	ND < 0.0050	ND < 0.025	ND < 2.5	ND < 2.5	65	2.5	170
Oct-00	107.46	ND < 0.020	ND < 0.010	ND < 0.0050	ND < 0.025	ND < 1.0	ND < 1.0	2	ND < 1.0	43
Apr-01	107.55	0.0007	0.017	ND < 0.0050	ND < 0.025	ND <2.0	ND < 2.0	12	3.1	150

** Hexavalent chromium sample or result for MW03 likely switched with MW30 (duplicate of MW04).

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		METALS				VOLATILE ORGANIC COMPOUNDS				
Monitor Well No. / Date	Groundwater Elevation (Feet MSL)	Hexavalent Chromium (mg/L)	Total Chromium (mg/L)	Cadmium (mg/L)	Copper (mg/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl-Benzene (ug/L)	Total Xylenes (ug/L)	Trichloroethene (ug/L)
MW - 4										
Jan-89	95.21	33.0	400.0	0.028	ND < 0.009	ND < 0.5	10.0	15.0	29.0	120
Apr-89	99.19	43.0	100.0	0.05	0.02	ND < 5	23.0	15.0	50.0	280
Jul-89	98.19	120.0	98.0	0.08	0.06	ND < 14	ND < 20.0	140.0	40.0	290
Oct-89	94.92	110.0	120.0	0.07	ND < 0.05	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	250
Jan-90	95.87	109.0	95.1	0.12	ND < 0.02	ND < 12	ND < 12.0	ND < 12.0	ND < 25.0	220
Apr-90	97.50	81.7	80.7	0.13	0.02	ND < 10	ND < 10.0	ND < 10.0	ND < 20.0	280
Jul-90	99.20	100.0	101.0	0.35	ND < 0.02	ND < 50	ND < 50.0	1600.0	170.0	320
Oct-90	98.33	58.9	48.4	0.23	0.022	ND < 0.5	17.0	230.0	650.0	250
Jan-91	97.68	49.4	65.3	0.26	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	1200.0	180
Apr-91	100.50	23.8	18.4	0.076	ND < 0.02	ND < 0.5	ND < 1.0	730.0	ND < 1.0	170
Jul-91	101.47	39.1	78.5	0.61	ND < 0.02	ND < 0.5	16000.0	6700.0	18000	190
Oct-91	100.91	42.0	40.8	0.21	ND < 0.01	ND < 0.5	6900.0	4100.0	10000	ND < 400
Jan-92	103.33	41.0	34.0	0.47	0.045	ND < 250	18,000	10,000	17,200	ND < 250
Apr-92	105.94	32.2	29.2	0.84	0.053	6.7	7.2	960.0	1010.0	280
Jul-92	106.5	79.9	59.7	0.86	ND < 0.02	ND < 5	ND < 10.0	200.0	280.0	280
Oct-92	103.92	21.6	27.1	0.32	ND < 0.02	71	ND < 10.0	1300.0	230.0	230
Jan-93	107.13	16.4	27.4	0.28	ND < 0.02	ND < 130	10000.0	10000	19000	ND < 250
Apr-93	115	1.8	2.2	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	88.0	13.0	25
Jul-93	115.52	21.0	23.2	0.2	0.056	0.6	2.0	1.8	11.0	100
Oct-93	115.76	* 35.5/99.2	80.3	0.71	ND < 0.2	1.3	ND < 1.0	ND < 1.0	40.0	290
Jan-94	115.42	0.36	36.0	0.23	ND < 0.02	0.81	ND < 1.0	8.3	14.0	130
Apr-94	116.20	26.9	26.4	0.33	ND < 0.02	ND < 0.5	ND < 1.0	4.0	6.5	190
Jul-94	116.76	59.0	41.4	0.20	0.038	0.58	ND < 1.0	ND < 1.0	4.2	340
Oct-94	110.86	60.7	52.8	0.45	ND < 0.02	ND < 5	ND < 10.0	270.0	39.0	390
Jan-95	111.88	28.8	34.3	0.13	0.026	ND < 5	ND < 10.0	350.0	130.0	190
Apr-95	117.69	8.6	9.1	0.21	0.052	ND < 100	1600.0	1700.0	2900.0	67
Jul-95	119.05	* 28.1/20.8	29.6	0.27	*.10/ND < 0.02	ND < 10	* 270/410	* 260/380	* 890/1300	90
Oct-95	115.35	**30.8	28.9	0.38	ND < 0.02	ND < 2.5	ND < 5.0	75.0	21.0	150
Jan-96	113.37	25.7	32.4	0.19	ND < 0.02	ND < 50	100.0	2100.0	1400.0	160
Apr-96	116.65	* 32.2/24.6	38.0	0.60	ND < 0.02	ND < 25	680.0	1300.0	1400.0	130
Jul-96	116.17	50	58.9	0.28	ND < 0.02	ND < 50	ND < 100.0	1000.0	270.0	140
Oct-96	112.38	63.8	75.7	0.46	ND < 0.04	ND < 50	380.0	1100.0	1900.0	310
Jan-97	114.07	*45.9/34.9	34.5	0.54	0.02	ND < 6.2	ND < 12.0	1100.0	ND < 12.0	330
Apr-97	116.96	27.3	18.8	0.53	ND < 0.02	ND < 12	35.0	1300.0	620.0	150
Jul-97	117.04	36.0	35.2	0.62	ND < 0.02	ND < 5	ND < 10.0	810.0	110.0	150
Oct-97	113.46	73.8	85.3	0.64	ND < 0.08	ND < 5	ND < 10.0	460.0	31.0	230
Jan-98	111.66	39.2	44.0	0.53	ND < 0.02	ND < 5	ND < 10.0	530.0	420.0	180
Apr-98	116.69	7.2	14.1	0.43	ND < 0.02	2.9	ND < 5.0	320.0	ND < 5.0	92
Jul-98	117.95	16.3	18.9	0.32	ND < 0.02	ND < 12	ND < 25.0	1200.0	300.0	120
Oct-98	115.31	34.1	36.2	0.44	0.030	ND < 6.2	ND < 12.0	740.0	240.0	120
Jan-99	112.41	78.6	85.2	0.58	ND < 0.04	ND < 5	ND < 10	520.0	31.0	260
Apr-99	112.43	*0.57/4.6	42.8	0.41	ND < 0.05	3.5	ND < 2.5	220	9.9	190
Jul-99	112.33	41.1	49.7	0.42	ND < 0.050	ND < 10	ND < 10	670	67	140
Oct-99	104.49	58.2	105	0.59	ND < 0.075	ND < 5.0	ND < 5.0	92	11	210
Jan-00	100.66	76.3	60.0	0.32	ND < 0.050	5.1	ND < 2.5	ND < 2.5	6.0	160
Apr-00	107.01	32.9	39.3	0.55	ND < 0.050	ND < 5.0	ND < 5.0	46	8.6	240
Oct-00	107.42	45.6	42.1	0.52	ND < 0.050	ND < 50	2500	2500	ND < 50	170
Apr-01	107.49	11.0	16.8	0.38	ND < 0.025	ND < 50	120	3,100	830	150

* 35.5/99.2 = original sample/duplicate sample (both results presented because duplicate result deviation is >20%)

** Analyzed after holding time had expired.

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		METALS				VOLATILE ORGANIC COMPOUNDS				
Monitor Well No. / Date	Groundwater Elevation (Feet MSL)	Hexavalent Chromium (mg/L)	Total Chromium (mg/L)	Cadmium (mg/L)	Copper (mg/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl-Benzene (ug/L)	Total Xylenes (ug/L)	Trichloroethene (ug/L)
MW - 6B										
Jan-89	95.12	ND < 0.01	ND < 0.014	ND < 0.003	ND < 0.009	ND < 0.01	ND < 0.0	ND < 0.0	ND < 0.0	57
Apr-89	99.11	ND < 0.05	0.06	ND < 0.01	ND < 0.02	ND < 0.7	ND < 1.0	ND < 1.0	ND < 1.0	37
Jul-89	98.39	ND < 0.05	0.04	ND < 0.01	ND < 0.02	ND < 0.7	ND < 1.0	ND < 1.0	ND < 1.0	29
Oct-89	95.35	ND < 0.05	ND < 0.02	ND < 0.01	ND < 0.05	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	29
Jan-90	96.1	ND < 0.02	ND < 0.01	ND < 0.01	ND < 0.02	ND < 0.5	ND < 0.5	ND < 0.5	ND < 1.0	46
Apr-90	97.76	ND < 0.02	0.02	ND < 0.005	ND < 0.02	ND < 2.5	ND < 2.5	ND < 2.5	ND < 5.0	61
Jul-90	99.28	ND < 0.02	0.02	ND < 0.01	ND < 0.02	ND < 0.5	ND < 0.5	ND < 0.5	ND < 1.0	51
Oct-90	98.45	ND < 0.02	0.012	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	52
Jan-91	97.87	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	59
Apr-92	105.86	ND < 0.02	0.014	ND < 0.005	ND < 0.02	ND < 0.5	ND < 0.5	1.1	0.8	19
Jul-92	106.57	ND < 0.02	0.019	ND < 0.005	0.054	ND < 0.5	ND < 0.5	ND < 1.0	ND < 1.0	10
Oct-92	104.12	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	12.0	2.9	13.0	9.3
Jan-93	107.23	ND < 0.02	0.011	ND < 0.005	0.038	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	6.9
Apr-93	114.64	ND < 0.02	0.014	ND < 0.005	ND < 0.02	ND < 0.5	64.0	26.0	88.0	2.6
Jul-93	115.34	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	2.2	2.0	5.5	2.7
Oct-93	115.46	ND < 0.02	0.011	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	5.9
Jan-94	115.37	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	2.7
Apr-94	116.15	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	2.0
Jul-94	116.67	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	1.1	ND < 1.0	1.9	2.9
Oct-94	111.13	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	1.5	ND < 1.0	8.2	1.5
Jan-95	112.19	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 1	110.0	89.0	110.0	8.6
Apr-95	117.42	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	1.6	9.1	6.2	2.3
Jul-95	118.93	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	1.1	4.0	5.1	8.8
Oct-95	115.45	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	1.0	2.6
Jan-96	113.47	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 1	28.0	27.0	53.0	14
Apr-96	116.65	ND < 0.02	0.011	ND < 0.005	ND < 0.02	ND < 1	4.2	37.0	50.0	2.9
Jul-96	116.18	ND < 0.01	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	2.3	3.5	2.3
Oct-96	112.66	ND < 0.01	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	1.0	2.1	2.8	6.1
Jan-97	114.20	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	4.3	4.3	6.4	5.0
Apr-97	116.95	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	3.6	1.7	ND < 1.0	5.2
Jul-97	117.01	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	6.6
Oct-97	113.71	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	6.4
Jan-98	112.06	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	15.0	32.0	39.0	17.0
Apr-98	116.76	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	1.6	4.2	6.0	7.7
Jul-98	117.95	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	4.3
Oct-98	114.83	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	9.9
Jan-99	112.74	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	5.0	24.0	29.0	17.0
Apr-99	112.56	ND < 0.01	ND < 0.01	ND < 0.005	ND < 0.025	ND < 1.0	19	42	33.9	31
Jul-99	112.43	ND < 0.020	ND < 0.010	ND < 0.0050	ND < 0.025	ND <1.0	ND <1.0	1.2	ND < 1.0	8.2
Oct-99	105.04	ND < 0.010	ND < 0.010	ND < 0.0050	ND < 0.025	ND < 1.0	ND < 1.0	4.8	ND < 1.0	12.0
Jan-00	101.26	ND < 0.020	ND < 0.010	ND < 0.0050	ND < 0.025	ND <1.0	ND <1.0	2.0	ND < 1.0	13.0
Apr-00	107.21	ND < 0.010	ND < 0.010	ND < 0.0050	ND < 0.025	ND <1.0	ND <1.0	1.1	ND < 1.0	7.0
Oct-00	107.55	ND < 0.020	ND < 0.010	ND < 0.0050	ND < 0.025	ND < 1.0	ND < 1.0	ND < 1.0	ND < 1.0	9.2
Apr-01	107.58	0.0051	ND < 0.010	ND < 0.0050	ND < 0.025	ND < 1.0	ND < 1.0	ND < 1.0	ND < 1.0	5.9

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		METALS				VOLATILE ORGANIC COMPOUNDS				
Monitor Well No. / Date	Groundwater Elevation (Feet MSL)	Hexavalent Chromium (mg/L)	Total Chromium (mg/L)	Cadmium (mg/L)	Copper (mg/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl-Benzene (ug/L)	Total Xylenes (ug/L)	Trichloroethene (ug/L)
MW - 7										
Jan-89	89.47	ND < 0.01	ND < 0.014	ND < 0.003	ND < 0.009	ND < 0.5	1.4	1.2	3.6	35
Apr-89	98.83	ND < 0.05	0.02	ND < 0.01	ND < 0.02	ND < 0.7	ND < 1.0	ND < 1.0	ND < 1.0	47
Jul-89	97.90	ND < 0.05	0.03	ND < 0.01	ND < 0.05	ND < 0.7	ND < 1.0	ND < 1.0	ND < 1.0	25
Oct-89	94.72	ND < 0.05	ND < 0.02	ND < 0.01	ND < 0.05	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	44
Jan-90	95.58	ND < 0.02	ND < 0.01	ND < 0.01	ND < 0.02	ND < 2.5	ND < 2.5	ND < 2.5	ND < 5.0	39
Apr-90	97.32	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 2.5	ND < 2.5	ND < 2.5	ND < 5.0	46
Jul-90	98.85	ND < 0.02	ND < 0.01	ND < 0.01	ND < 0.02	ND < 1	ND < 1.0	ND < 1.0	ND < 2.0	34
Oct-90	98.02	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	19
Jan-91	97.41	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	1.8
Apr-91	100.06	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	30
Jul-91	101.20	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	53
Oct-91	100.62	ND < 0.02	ND < 0.01	ND < 0.005	0.01	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	54
Jan-92	102.90	0.07	ND < 0.0081	ND < 0.0027	0.14	ND < 1	ND < 1.0	ND < 1.0	ND < 1.0	120
Apr-92	105.54	ND < 0.02	0.013	ND < 0.005	0.032	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	55
Jul-92	103.13	ND < 0.02	0.095	ND < 0.005	0.21	ND < 1	ND < 2.0	ND < 2.0	ND < 2.0	53
Oct-92	103.68	ND < 0.02	0.063	ND < 0.005	0.65	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	98
Jan-93	106.82	ND < 0.02	0.033	ND < 0.005	0.19	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	73
Apr-93	114.54	ND < 0.02	0.011	ND < 0.005	ND < 0.02	ND 1.2	ND < 2.5	90.0	5.6	23
Jul-93	115.14	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 5	ND < 10.0	210.0	ND < 10.0	43
Oct-93	115.23	ND < 0.2	ND < 0.01	ND < 0.005	0.02	0.82	ND < 1.0	7.2	ND < 1.0	44
Jan-94	115.08	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	1.4	ND < 1.0	33.0	ND < 1.0	53
Apr-94	115.88	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND< 2.5	ND < 5.0	200.0	ND < 5.0	96
Jul-94	116.44	ND < 0.02	ND < 0.01	ND < 0.005	0.023	0.88	ND < 1.0	7.7	1.2	140
Oct-94	110.69	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	5.1	5.5	98
Jan-95	111.59	ND < 0.02	ND < 0.01	ND < 0.005	0.026	ND < 0.5	7.0	8.7	10.0	170
Apr-95	117.24	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	1.3	ND < 1.0	26
Jul-95	118.63	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	2.1	3.4	53
Oct-95	115.08	ND < 0.02	0.014	ND < 0.005	0.079	0.74	ND < 1.0	3.8	1.4	98
Jan-96	112.98	ND < 0.02	ND < 0.01	ND < 0.005	0.043	1.0	4.2	4.9	10.0	85
Apr-96	116.39	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	1.3	11.0	14.0	37
Jul-96	115.83	ND < 0.01	ND < 0.01	ND < 0.005	ND < 0.02	1.0	ND < 1.0	1.6	2.7	87
Oct-96	112.17	ND < 0.01	ND < 0.01	ND < 0.005	0.036	0.96	ND < 1.0	1.4	1.5	150
Jan-97	113.76	ND < 0.02	ND < 0.01	ND < 0.005	0.029	ND < 0.5	ND < 1.0	1.7	2.8	95
Apr-97	116.62	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	1.1	1.2	ND < 1.0	63
Jul-97	116.74	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	0.56	ND < 1.0	ND < 1.0	ND < 1.0	54
Oct-97	111.27	ND < 0.02	ND < 0.01	ND < 0.005	0.025	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	85
Jan-98	111.47	ND < 0.02	0.01	ND < 0.005	0.044	ND < 0.5	2.2	5.2	6.8	97
Apr-98	116.38	ND < 0.02	0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	1.6	1.8	23
Jul-98	117.62	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	53
Oct-98	115.06	ND < 0.02	ND < 0.01	ND < 0.005	0.042	0.68	ND < 1.0	ND < 1.0	ND < 1.0	88
Jan-99	112.28	ND < 0.02	ND < 0.01	0.0056	0.05	ND < 1.2	ND < 2.5	ND < 2.5	ND < 2.5	160
Apr-99	112.11	ND < 0.01	ND < 0.01	ND < 0.005	0.042	ND < 2.0	3.0	11	6.8	80
Jul-99	112.09	ND < 0.020	ND < 0.020	ND < 0.010	0.068	ND < 1.0	ND < 1.0	1.3	ND < 1.0	65
Oct-99	104.50	ND < 0.010	ND < 0.010	ND < 0.0050	0.071	ND < 2.0	ND < 2.0	ND < 2.0	ND < 2.0	130
Jan-00	100.67	ND < 0.020	ND < 0.010	ND < 0.0050	ND < 0.025	ND < 1.0	ND < 1.0	ND < 1.0	ND < 1.0	47
Apr-00	106.84	ND < 0.010	ND < 0.010	ND < 0.0050	0.035	ND < 1.0	ND < 1.0	1.2	ND < 1.0	48
Oct-00	107.24	ND < 0.020	ND < 0.010	ND < 0.0050	0.057	ND < 2.5	ND < 2.5	ND < 2.5	ND < 2.5	110
Apr-01	107.22	0.001	ND < 0.010	ND < 0.0050	ND < 0.025	ND < 1.0	ND < 1.0	ND < 1.0	ND < 1.0	78

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		METALS				VOLATILE ORGANIC COMPOUNDS				
Monitor Well No / Date	Groundwater Elevation (Feet MSL)	Hexavalent Chromium (mg/L)	Total Chromium (mg/L)	Cadmium (mg/L)	Copper (mg/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl-Benzene (ug/L)	Total Xylenes (ug/L)	Trichloroethene (ug/L)
MW-9										
Jan-89	95.55	0.45	0.33	ND < 0.003	ND < 0.009	ND < 0.5	ND < 0.5	ND < 0.5	ND < 1.0	55
Apr-89	99.67	ND < 0.02	0.06	ND < 0.01	ND < 0.02	ND < 0.7	ND < 1.0	ND < 1.0	ND < 1.0	24
Jul-89	98.77	ND < 0.05	0.17	ND < 0.01	0.02	ND < 0.7	ND < 1.0	ND < 1.0	ND < 1.0	57
Oct-89	95.62	2.5	1.8	ND < 0.01	ND < 0.05	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	110
Jan-90	96.44	2.28	2.2	ND < 0.01	ND < 0.02	ND < 2.5	ND < 2.5	ND < 2.5	ND < 5.0	100
Apr-90	98.26	0.8	0.81	ND < 0.005	ND < 0.02	ND < 2.5	ND < 2.5	ND < 2.5	ND < 5.0	150
Jul-90	99.78	0.03	0.04	ND < 0.01	ND < 0.02	ND < 2.5	ND < 2.5	ND < 2.5	ND < 5.0	64
Oct-90	98.69	0.25	0.19	ND < 0.005	0.062	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	17
Jan-91	98.04	0.124	0.085	ND < 0.005	ND < 0.02	ND < 0.5	6.6	1.4	9.0	26
Apr-91	100.83	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	26
Jul-91	101.88	ND < 0.02	0.027	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	99.0	ND < 1.0	41
Oct-91	101.30	0.05	0.07	ND < 0.005	ND < 0.01	ND < 0.5	ND < 1.0	94.0	ND < 1.0	120
Jan-92	103.62	ND < 0.05	ND < 0.0081	ND < 0.0027	0.031	ND < 1	ND < 1.0	1220.0	92.0	45
Apr-92	106.27	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.05	2800.0	3600.0	6190.0	52
Jul-92	106.93	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.05	34000.0	7900.0	24000	ND < 1000
Oct-92	104.3	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 1000	83000.0	13000	58000	ND < 1000
Jan-93	107.56	ND < 0.02	0.057	ND < 0.005	0.053	ND < 50	400.0	3900.0	5300.0	ND < 100
Apr-93	115.26	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 50	5100.0	4000.0	9200.0	110
Jul-93	115.81	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 16	ND < 33.0	160.0	74.0	1100
Oct-93	115.79	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 2.5	ND < 5.0	120.0	45.0	390
Jan-94	115.76	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 10	48.0	290.0	220.0	230
Apr-94	116.51	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 500	17000.0	12000	32000	270
Jul-94	117.03	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 1000	56000.0	15000	40000	200
Oct-94	111.17	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 500	57000.0	11000	34000	350
Jan-95	112.25	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 250	8200.0	9800.0	2000.0	310
Apr-95	117.92	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 50	ND < 100.0	650.0	480.0	670
Jul-95	119.31	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 10	69.0	780.0	340.0	540
Oct-95	115.67	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 25	110.0	670.0	1900.0	320
Jan-96	113.73	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 50	100.0	4300.0	6100.0	500
Apr-96	117.00	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	3.3	5.5	24.0	22.0	580
Jul-96	116.49	ND < 0.01	ND < 0.01	ND < 0.005	ND < 0.02	4.6	ND < 2.0	42.0	4.3	570
Oct-96	112.73	ND < 0.01	ND < 0.01	ND < 0.005	ND < 0.02	ND < 50	ND < 100.0	2900.0	350.0	470
Jan-97	114.46	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 2.5	ND < 5.0	ND < 5.0	ND < 5.0	400
Apr-97	117.29	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 5	ND < 10.0	18.0	ND < 10.0	770
Jul-97	117.34	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 25	ND < 50.0	2500.0	860.0	850
Oct-97	113.75	ND < 0.02	0.048	ND < 0.005	ND < 0.02	ND < 25	150.0	1900.0	4800.0	ND < 50
Jan-98	112.06	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 5	ND < 10.0	690.0	260.0	270
Apr-98	117.07	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 5	ND < 10.0	23.0	ND < 10.0	390
Jul-98	118.26	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 12	ND < 25.0	73.0	ND < 25.0	1300
Oct-98	115.49	3.3	1.3	0.0075	0.34	7.4	ND < 12.0	390.0	ND < 12.0	1200
Jan-99	112.68	3.3	2.4	ND < 0.005	ND < 0.02	ND < 6.2	ND < 12.0	100.0	83.0	550
Apr-99	112.77	ND < 0.01	0.64	ND < 0.005	ND < 0.025	ND < 5.0	ND < 5.0	ND < 5.0	ND < 5.0	350
Jul-99	112.57	5.8	5.6	ND < 0.010	ND < 0.050	ND < 25	ND < 25	ND < 25	ND < 25	810
Oct-99	104.91	4.0	4.2	ND < 0.0050	ND < 0.025	ND < 5.0	ND < 5.0	ND < 5.0	ND < 5.0	280
Jan-00	101.15	14.1	13.9	ND < 0.0050	ND < 0.025	ND < 5.0	ND < 5.0	ND < 5.0	ND < 5.0	170
Apr-00	107.56	ND < 0.010	ND < 0.010	ND < 0.0050	ND < 0.025	ND < 5.0	ND < 5.0	ND < 5.0	ND < 5.0	370
Oct-00	107.81	ND < 0.020	0.014	ND < 0.0050	ND < 0.025	ND < 5.0	ND < 5.0	29.0	ND < 5.0	160
Apr-01	107.89	0.0043	0.011	ND < 0.0050	ND < 0.025	ND < 5.0	ND < 5.0	ND < 5.0	ND < 5.0	200

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		METALS				VOLATILE ORGANIC COMPOUNDS				
Monitor Well No. / Date	Groundwater Elevation (Feet MSL)	Hexavalent Chromium (mg/L)	Total Chromium (mg/L)	Cadmium (mg/L)	Copper (mg/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl-Benzene (ug/L)	Total Xylenes (ug/L)	Trichloroethene (ug/L)
MW - 11										
Jan-89	95.97	ND < 0.01	ND < 0.014	ND < 0.003	ND < 0.009	ND < 0.5	ND < 0.5	43.0	1.5	34
Apr-89	99.85	ND < 0.02	0.04	ND < 0.01	ND < 0.02	ND < 500	7500.0	2600.0	11000	39
Jul-89	98.95	ND < 0.05	ND < 0.02	ND < 0.01	0.13	ND < 7	ND < 10.0	ND < 10.0	90.0	29
Oct-89	95.77	ND < 0.05	ND < 0.02	ND < 0.01	ND < 0.05	ND < 5	ND < 10.0	200.0	ND < 10.0	35
Jan-90	96.72	ND < 0.02	ND < 0.01	ND < 0.01	ND < 0.02	ND < 5	ND < 5.0	83.0	ND < 10.0	46
Apr-90	98.44	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 2.5	2.6	370.0	150.0	33
Jul-90	100.00	ND < 0.02	ND < 0.01	ND < 0.01	0.03	ND < 25	440.0	1000.0	760.0	65
Oct-90	98.97	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	15000.0	3000.0	10000	ND < 1
Jan-91	98.29	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	15000.0	4700.0	12000	ND < 1
Apr-91	101.17	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	8500.0	3300.0	7500.0	63
Jul-91	102.19	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	57.0	520.0	220.0	61
Oct-91	101.61	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.01	ND < 0.5	140.0	2000.0	660.0	110
Jan-92	104.09	0.10	ND < 0.0081	ND < 0.0027	0.02	ND < 1	7.3	230.0	26.0	85
Apr-92	106.61	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.01	ND < 0.05	1.7	130.0	2.3	70
Jul-92	107.12	ND < 0.02	0.02	ND < 0.005	0.09	ND < 0.05	ND < 0.1	17.0	ND < 0.1	160
Oct-92	104.55	ND < 0.02	0.011	ND < 0.005	ND < 0.01	ND < 0.05	ND < 0.1	11.0	ND < 0.1	160
Jan-93	108.27	ND < 0.02	0.013	ND < 0.005	0.088	ND < 1.2	ND < 2.5	110.0	ND < 2.5	86
Apr-93	115.6	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.05	ND < 1.0	2.0	ND < 1.0	59
Jul-93	116.07	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.05	2.5	1.8	6.4	230
Oct-93	116.01	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	2.1	3.1	150
Jan-94	116.03	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	2.5	2.8	190
Apr-94	116.83	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	80
Jul-94	117.23	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	1.6	180
Oct-94	111.30	ND < 0.02	0.011	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	4.5	ND < 1.0	360
Jan-95	112.53	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 10	660.0	850.0	1100.0	660
Apr-95	118.26	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 50	ND < 100.0	1900.0	1000.0	74
Jul-95	119.51	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 2.5	ND < 5.0	160.0	37.0	140
Oct-95	115.80	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	5.8	2.2	180
Jan-96	113.98	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 25	520.0	460.0	1000.0	620
Apr-96	117.37	ND < 0.02	ND < 0.01	ND < 0.005	0.023	ND < 25	160.0	1100.0	1400.0	240
Jul-96	116.75	ND < 0.01	ND < 0.01	ND < 0.005	ND < 0.02	ND < 10	ND < 20.0	460.0	290.0	220
Oct-96	112.95	ND < 0.01	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	1.9	20.0	8.0	250
Jan-97	114.78	ND < 0.02	ND < 0.01	ND < 0.005	0.029	ND < 0.5	9.4	84.0	88.0	160
Apr-97	117.60	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 2.5	ND < 5.0	120.0	8.2	370
Jul-97	117.61	ND < 0.02	ND < 0.01	ND < 0.005	0.15	ND < 2.5	ND < 5.0	8.3	ND < 5.0	240
Oct-97	114.02	ND < 0.02	ND < 0.01	ND < 0.005	0.1	ND < 2.5	ND < 5.0	ND < 5.0	ND < 5.0	350
Jan-98	112.23	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 12	770.0	1800.0	2200.0	390
Apr-98	117.36	ND < 0.02	ND < 0.01	ND < 0.005	0.077	ND < 1.2	63.0	150.0	210.0	180
Jul-98	118.57	ND < 0.02	ND < 0.01	ND < 0.005	0.077	ND < 1.2	ND < 2.5	41.0	4.8	150
Oct-98	115.91	ND < 0.02	ND < 0.01	ND < 0.005	0.041	ND < 5	ND < 10.0	ND < 10.0	ND < 10.0	430
Jan-99	113.05	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 6.2	260.0	750.0	970.0	690
Apr-99	113.14	ND < 0.01	ND < 0.01	ND < 0.005	ND < 0.025	ND < 25	670	1600	1270	480
Jul-99	112.88	ND < 0.020	ND < 0.010	ND < 0.0050	ND < 0.025	ND < 10	ND < 10	85	ND < 10	740
Oct-99	105.05	0.057	0.02	ND < 0.0050	ND < 0.025	ND < 10	ND < 10	480	52	650
Jan-00	101.31	ND < 0.020	ND < 0.010	ND < 0.0050	ND < 0.025	ND < 12	ND < 12	ND < 12	ND < 12	820
Apr-00	107.91	ND < 0.010	ND < 0.010	ND < 0.0050	ND < 0.025	ND < 12	ND < 12	55	17	1100
Oct-00	108.06	ND < 0.020	ND < 0.010	ND < 0.0050	ND < 0.025	ND < 50	ND < 50	ND < 50	ND < 50	2900
Apr-01	108.20	ND < 0.0020	ND < 0.010	ND < 0.0050	ND < 0.025	ND < 25	ND < 25	48	ND < 25	1700

Shallow Wells
PHIBRO-TECH, INC.
Historical Results
January 1989 to July 2001

		METALS				VOLATILE ORGANIC COMPOUNDS				
Monitor Well No. / Date	Groundwater Elevation (Feet MSL)	Hexavalent Chromium (mg/L)	Total Chromium (mg/L)	Cadmium (mg/L)	Copper (mg/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl-Benzene (ug/L)	Total Xylenes (ug/L)	Trichloroethene (ug/L)
MW - 14S										
Oct-90	98.07	3.2	2.2	0.018	5.3	ND < 0.5	ND < 1.0	1750.0	ND < 1.0	180
Jan-91	97.38	0.4	0.94	0.007	1	ND < 0.5	ND < 1.0	2800.0	5900.0	108
Apr-91	99.26	0.39	0.41	0.005	0.15	ND < 0.5	ND < 1.0	4100.0	ND < 1.0	84
Jul-91	101.27	0.02	0.31	0.005	0.11	ND < 0.5	ND < 1.0	31.0	ND < 1.0	55
Oct-91	100.66	0.13	0.23	ND < 0.005	0.05	ND < 0.5	ND < 1.0	680.0	ND < 1.0	81
Jan-92	103.08	0.27	0.15	ND < 0.0027	0.093	ND < 1	ND < 1.0	ND < 1.0	ND < 1.0	59
Apr-92	105.70	0.13	0.16	ND < 0.005	0.04	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	56
Jul-92	106.38	0.1	0.33	ND < 0.005	0.56	0.6	ND < 1.0	ND < 1.0	ND < 1.0	44
Oct-92	103.72	0.16	0.54	ND < 0.005	0.72	ND < 1	ND < 1.0	ND < 1.0	ND < 1.0	71
Jan-93	107.00	0.056	0.24	ND < 0.005	0.33	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	56
Apr-93	114.80	ND < 0.02	0.018	ND < 0.005	0.032	ND < 0.5	24.0	40.0	55.0	18
Jul-93	115.36	ND < 0.02	0.20	ND < 0.005	0.023	ND < 0.5	1.3	1.2	3.8	25
Oct-93	115.42	ND < 0.02	0.01	ND < 0.005	0.021	ND < 0.5	ND < 1.0	2.1	3.7	25
Jan-94	115.28	ND < 0.02	0.015	ND < 0.005	0.022	ND < 0.5	ND < 1.0	3.2	1.4	21
Apr-94	116.06	ND < 0.02	0.022	ND < 0.005	ND < 0.020	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	29
Jul-94	116.64	ND < 0.02	0.016	ND < 0.005	ND < 0.020	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	15
Oct-94	110.70	0.035	0.064	ND < 0.005	ND < 0.020	0.53	ND < 1.0	ND < 1.0	ND < 1.0	58
Feb-95	113.10	ND < 0.02	0.016	ND < 0.005	0.020	ND < 50	ND < 100.0	3000.0	690.0	50
Apr-95	117.50	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.020	ND < 5	76.0	120.0	190.0	20
Jul-95	118.93	ND < 0.02	ND < 0.01	0.0055	ND < 0.020	ND < 0.5	2.8	26.0	12.0	22
Oct-95	115.25	0.022	0.046	ND < 0.005	ND < 0.020	ND < 0.5	ND < 1.0	2.1	2.0	35
Jan-96	113.13	ND < 0.02	0.034	ND < 0.005	0.024	ND < 1	4.7	87.0	58.0	42
Apr-96	116.52	0.021	0.028	ND < 0.005	ND < 0.020	ND < 2.5	54.0	120.0	110.0	51
Jul-96	116.04	ND < 0.01	0.069	ND < 0.005	ND < 0.020	0.58	ND < 1.0	20.0	10.0	37
Oct-96	112.22	0.052	0.082	ND < 0.005	ND < 0.020	ND < 0.5	ND < 1.0	13.0	2.9	61
Jan-97	113.85	0.024	0.031	ND < 0.005	ND < 0.020	ND < 2.5	ND < 5.0	470.0	ND < 5.0	90
Apr-97	116.82	ND < 0.02	0.032	0.0053	ND < 0.020	0.58	2.9	91.0	36.0	45
Jul-97	117.21	ND < 0.02	0.016	ND < 0.005	ND < 0.020	ND < 5	ND < 1.0	14.0	1.0	35
Oct-97	113.39	0.1	0.013	ND < 0.005	ND < 0.020	ND < 0.5	ND < 1.0	20.0	1.8	57
Jan-98	111.43	* ND/0.0103	0.018	ND < 0.005	0.020	ND < 0.5	1.1	19.0	5.0	50
Apr-98	116.47	ND < 0.02	0.018	ND < 0.005	0.023	ND < 12	ND < 25.0	1500.0	150.0	38
Jul-98	117.79	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.020	0.51	ND < 1.0	18.0	8.4	18
Oct-98	115.19	0.032	0.044	ND < 0.005	0.027	ND < 1.2	ND < 2.5	120.0	29.0	62
Jan-99	112.31	0.058	0.032	ND < 0.005	ND < 0.020	1.1	ND < 2.0	77.0	64.0	98
Apr-99	112.21	ND < 0.01	ND < 0.01	ND < 0.005	ND < 0.025	ND < 12	ND < 12	820	47	84
Jul-99	112.19	ND < 0.020	0.038	ND < 0.0050	0.037	ND < 50	ND < 50	3,000	ND < 50	74
Oct-99	104.31	0.035	0.15	0.006	0.044	2.1	ND < 2.0	120	ND < 2.0	180
Jan-00	100.43	0.11	0.26	0.0094	0.031	ND < 5.0	ND < 5.0	ND < 5.0	ND < 5.0	230
Apr-00	106.91	ND < 0.010	ND < 0.010	ND < 0.0050	0.025	3.2	ND < 2.0	110	ND < 2.0	60
Oct-00	107.06	0.039	0.09	ND < 0.0050	0.087	ND < 5.0	ND < 5.0	230	ND < 5.0	170
Apr-01	107.27	0.057	0.043	ND < 0.0050	0.03	2.1	ND < 2.0	9	ND < 2.0	130

* ND/10.3 = EPA method 7196/EPA Method 218.6 (Sample was analyzed for hexavalent chromium by two methods.)

Shallow Wells
PHIBRO-TECH, INC.
Historical Results
January 1989 to July 2001

		METALS				VOLATILE ORGANIC COMPOUNDS				
Monitor Well No. / Date	Groundwater Elevation (Feet MSL)	Hexavalent Chromium (mg/L)	Total Chromium (mg/L)	Cadmium (mg/L)	Copper (mg/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl-Benzene (ug/L)	Total Xylenes (ug/L)	Trichloroethene (ug/L)
MW - 15S										
Oct-90	97.71	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	21
Jan-91	97.10	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	4.0	1.6	4.0	13
Apr-91	99.71	ND < 0.02	ND < 0.01	0.011	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	28
Jul-91	100.94	ND < 0.02	ND < 0.01	0.014	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	17
Oct-91	100.35	ND < 0.02	0.01	0.02	0.06	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	13
Jan-92	102.72	ND < 0.051	ND < 0.0081	0.008	0.01	ND < 1	ND < 1.0	ND < 1.0	ND < 1.0	15
Apr-92	105.29	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.01	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	4.1
Jul-92	105.95	ND < 0.02	0.04	0.005	0.27	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	2.9
Oct-92	103.37	ND < 0.02	ND < 0.02	0.0073	0.047	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 1
Jan-93	106.58	ND < 0.02	0.014	0.0085	0.1	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	9.0
Apr-93	114.41	ND < 0.02	0.013	ND < 0.005	ND < 0.02	ND < 0.5	14.0	10.0	22.0	4.6
Jul-93	115.01	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	1.2	ND < 1.0	2.4	2.4
Oct-93	115.07	ND < 0.04	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	3.2
Jan-94	114.90	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	1.9
Apr-94	115.72	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	3.1
Jul-94	116.31	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	2.1
Oct-94	110.42	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	6.0
Jan-95	111.14	0.048	0.044	ND < 0.005	ND < 0.02	ND < 1	4.0	64.0	27.0	3.7
Apr-95	117.15	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 2.5	60.0	82.0	130.0	2.8
Jul-95	118.61	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	2.5	18.0	12.0	5.2
Oct-95	114.45	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	1.0	ND < 1.0	3.9
Jan-96	112.69	ND < 0.02	0.012	ND < 0.005	ND < 0.02	ND < 0.5	1.8	25.0	22.0	3.8
Apr-96	116.09	ND < 0.02	0.015	ND < 0.005	ND < 0.02	ND < 0.5	13.0	40.0	45.0	2.8
Jul-96	115.69	ND < 0.01	0.014	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	9.7	5.4	3.2
Oct-96	111.81	ND < 0.01	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	2.9	2.6	5.3
Jan-97	113.42	ND < 0.02	0.01	ND < 0.005	ND < 0.02	ND < 0.5	5.5	69.0	1.0	5.1
Apr-97	116.35	ND < 0.02	0.01	ND < 0.005	ND < 0.02	ND < 0.5	9.3	21.0	8.5	3.3
Jul-97	116.60	ND < 0.02	0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	8.2	1.3	4.1
Oct-97	113.08	ND < 0.02	0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	17.0	1.7	5.2
Jan-98	111.06	* ND/0.0177	0.021	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	12.0	3.7	5.0
Apr-98	116.05	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	60.0	7.2	3.1
Jul-98	117.47	ND < 0.02	0.014	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	10.0	2.9	3.4
Oct-98	114.87	ND < 0.02	0.017	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	45.0	12.0	3.9
Jan-99	111.98	0.024	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	19.0	2.2	7.0
Apr-99	111.85	ND < 0.01	0.013	ND < 0.005	ND < 0.025	ND < 1.0	ND < 1.0	23	2.2	4.2
Jul-99	111.89	ND < 0.020	0.010	ND < 0.0050	ND < 0.025	ND < 1.0	ND < 1.0	29	23	3.9
Oct-99	104.07	0.014	0.015	ND < 0.0050	ND < 0.025	ND < 2.0	ND < 2.0	12	ND < 2.0	6.7
Jan-00	100.09	ND < 0.020	ND < 0.010	0.012	ND < 0.025	ND < 1.0	ND < 1.0	9.3	ND < 1.0	25
Apr-00	106.56	ND < 0.010	ND < 0.010	ND < 0.0050	ND < 0.025	ND < 1.0	ND < 1.0	ND < 1.0	ND < 1.0	17
Oct-00	106.82	ND < 0.020	ND < 0.010	ND < 0.0050	ND < 0.025	ND < 1.0	ND < 1.0	17	ND < 1.0	6.7
Apr-01	106.99	0.0053	ND < 0.010	ND < 0.0050	ND < 0.025	ND < 1.0	ND < 1.0	ND < 1.0	ND < 1.0	3

* ND/0.0177 = EPA method 7196/EPA Method 218.6 (Sample was analyzed for hexavalent chromium by two methods.)

Shallow Wells
PHIBRO-TECH, INC.
Historical Results
January 1989 to July 2001

		METALS				VOLATILE ORGANIC COMPOUNDS				
Monitor Well No. / Date	Groundwater Elevation (Feet MSL)	Hexavalent Chromium (mg/L)	Total Chromium (mg/L)	Cadmium (mg/L)	Copper (mg/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl-Benzene (ug/L)	Total Xylenes (ug/L)	Trichloroethene (ug/L)
MW - 16										
Apr-92	105.99	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.01	ND < 0.5	0.7	1.0	1.6	52
Jul-92	106.7	ND < 0.02	0.03	ND < 0.02	0.35	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	35
Oct-92	104.07	ND < 0.02	0.011	ND < 0.005	0.15	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	72
Jan-93	107.3	ND < 0.02	ND < 0.01	ND < 0.005	0.44	ND < 1.2	ND < 2.5	ND < 2.5	ND < 2.5	51
Apr-93	114.9	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 25	55.0	2300.0	1200.0	42
Jul-93	115.54	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 50	ND < 100.0	3100.0	2000.0	15
Oct-93	115.51	ND < 0.04	ND < 0.01	ND < 0.005	ND < 0.02	ND < 5.0	ND < 10.0	340.0	ND < 10.0	24
Jan-94	115.46	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.02	ND < 20.0	1000.0	ND < 20.0	22
Apr-94	116.25	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 10	ND < 20.0	820.0	ND < 20.0	37
Jul-94	116.78	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 25	ND < 50.0	1300.0	730.0	76
Oct-94	111.02	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	1.5	2.4	9.7	91
Jan-95	112.08	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	17
Apr-95	117.60	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 5	16.0	36.0	55.0	34
Jul-95	118.99	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 10	ND < 20.0	* 540/370	ND < 20.0	67
Oct-95	115.45	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	1.8	1.3	60
Jan-96	113.49	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	11.0	9.7	26
Apr-96	116.72	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	9.8	30.0	33.0	36
Jul-96	116.24	ND < 0.01	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	6.6	3.6	110
Oct-96	112.59	ND < 0.01	ND < 0.01	ND < 0.005	ND < 0.02	ND < 5	49.0	130.0	230.0	73
Jan-97	114.18	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 1	4.6	23.0	ND < 2.0	32
Apr-97	117.01	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 1	ND < 2.0	7.2	2.4	31
Jul-97	117.12	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 1.2	ND < 2.5	6.5	ND < 2.5	30
Oct-97	113.66	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 2.5	ND < 5.0	8.2	ND < 5.0	53
Jan-98	111.92	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1.0	12.0	ND < 3.8	29
Apr-98	116.79	ND < 0.02	ND < 0.01	ND < 0.005	0.023	ND < 0.5	ND < 1.0	28.0	2.7	29
Jul-98	118.00	ND < 0.02	ND < 0.01	ND < 0.005	0.031	ND < 0.5	ND < 1.0	6.0	1.8	28
Oct-98	115.42	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 2.5	ND <5.0	16.0	ND < 5.0	58
Jan-99	112.68	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 1.0	ND < 2.0	11.0	ND < 2.0	36
Apr-99	112.59	ND < 0.01	ND < 0.01	ND < 0.005	ND < 0.025	ND < 2.0	ND < 2.0	6.1	ND < 2.0	39
Jul-99	112.43	ND < 0.020	ND < 0.010	ND < 0.0050	ND < 0.025	ND < 2.0	ND < 2.0	33	ND < 2.0	29
Oct-99	104.81	ND < 0.010	ND < 0.010	ND < 0.0050	ND < 0.025	ND < 2.0	ND < 2.0	ND < 2.0	ND < 5.0	42
Jan-00	101.03	ND < 0.020	ND < 0.010	ND < 0.0050	ND < 0.025	ND < 1.0	ND < 1.0	ND < 1.0	ND < 1.0	18
Apr-00	107.25	ND < 0.010	ND < 0.010	ND < 0.0050	ND < 0.025	ND < 2.0	ND < 2.0	ND < 2.0	ND < 2.0	26
Oct-00	107.51	ND < 0.020	ND < 0.010	ND < 0.0050	0.3	ND < 2.5	ND < 2.5	7	ND < 2.5	36
Apr-01	107.60	0.0003	ND < 0.010	ND < 0.0050	ND < 0.025	ND < 2.0	ND < 2.0	39.0	11.6	36

ND = Below detection limit as noted
MSL = Mean Sea Level
* 540/370 = original sample/duplicate sample (both results presented because duplicate result deviation is >20%)\\2279\2279-111\SPRDSHTS\02-04\[Apr02.xls]depth to Gage bottom

Deep Wells
PHIBRO-TECH, INC.
July 2001 Monitoring
Historical Results

Monitor Well No. / Date	Groundwater Elevation (Feet MSL)	Metals				Volatile Organic Compounds				
		Hexavalent Chromium (mg/L)	Total Chromium (mg/L)	Cadmium (mg/L)	Copper (mg/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl-Benzene (ug/L)	Total Xylenes (ug/L)	Trichloroethene (ug/L)
MW - 1D										
Jan-99	114.00	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1	1	ND < 1	2
Apr-99	114.01	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.025	ND < 1	ND < 1	ND < 1	ND < 2	2.1
Jul-99	113.67	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.025	ND < 1	ND < 1	ND < 1	ND < 2	2.7
Oct-99	106.55	0.014	ND < 0.01	ND < 0.005	ND < 0.025	ND < 1	ND < 1	ND < 1	ND < 1	2
Jan-00	152.60	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.025	ND < 1	ND < 1	ND < 1	ND < 1	7.1
Apr-00	108.84	ND < 0.01	ND < 0.01	ND < 0.005	ND < 0.025	ND < 1	1.7	ND < 1	ND < 1	3.3
Oct-00	108.98	ND < 0.020	ND < 0.010	ND < 0.0050	0.025	ND < 1.0	ND < 1.0	ND < 1.0	ND < 1.0	3.1
Apr-01	109.03	0.0007	ND < 0.010	ND < 0.0050	ND < 0.025	ND < 1.0	ND < 1.0	ND < 1.0	ND < 1.0	2.7
MW - 4A										
Jan-99	112.63	0.02	0.025	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1	ND < 1	ND < 1	10
Apr-99	112.58	ND < 0.02	0.012	ND < 0.005	ND < 0.025	ND < 1	ND < 1	2.9	1.7	7
Jul-99	112.46	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.025	ND < 1	ND < 1	670	67	5.2
Oct-99	104.64	0.017	ND < 0.01	ND < 0.005	ND < 0.025	ND < 1	ND < 1	ND < 1	ND < 2	4.5
Jan-00	152.46	ND < 0.02	0.015	ND < 0.005	ND < 0.025	ND < 1	ND < 1	ND < 1	ND < 1	4.2
Apr-00	107.30	ND < 0.01	ND < 0.01	ND < 0.005	ND < 0.025	ND < 1	ND < 1	ND < 1	ND < 1	8.6
Oct-00	107.48	ND < 0.020	ND < 0.010	ND < 0.0050	ND < 0.025	ND < 1.0	ND < 1.0	ND < 1.0	ND < 1.0	7.4
Apr-01	107.62	0.0056	ND < 0.010	ND < 0.0050	ND < 0.025	ND < 1.0	ND < 1.0	ND < 1.0	ND < 1.0	19
MW - 6D										
Jan-99	112.78	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	1.2	5.8	6.4	7.1
Apr-99	112.62	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.025	ND < 1	4	14	11.5	10
Jul-99	112.43	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.025	ND < 1	ND < 1	4.4	ND < 2	23
Oct-99	105.10	ND < 0.01	ND < 0.01	ND < 0.005	ND < 0.025	ND < 1	ND < 1	2.9	ND < 2	8.8
Jan-00	150.13	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.025	ND < 1	ND < 1	1.8	ND < 1	9.2
Apr-00	107.25	ND < 0.01	ND < 0.01	ND < 0.005	ND < 0.025	ND < 1	ND < 1	1	ND < 1	4.3
Oct-00	107.59	ND < 0.020	ND < 0.010	ND < 0.0050	ND < 0.025	ND < 1.0	ND < 1.0	ND < 1.0	ND < 1.0	10
Apr-01	107.61	0.0026	ND < 0.010	ND < 0.0050	ND < 0.025	ND < 1.0	ND < 1.0	ND < 1.0	ND < 1.0	10
MW -15D										
Jan-99	111.92	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.02	ND < 0.5	ND < 1	15	2.1	5.4
Apr-99	111.81	ND < 0.02	0.35	ND < 0.005	ND < 0.025	ND < 1	ND < 1	12	1.6	25
Jul-99	111.74	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.025	ND < 1	ND < 1	34	ND < 2	9
Oct-99	103.88	ND < 0.01	ND < 0.01	ND < 0.005	ND < 0.025	ND < 1	ND < 1	6	ND < 2	5.1
Jan-00	150.96	ND < 0.02	ND < 0.01	ND < 0.005	ND < 0.025	ND < 1	ND < 1	ND < 1	ND < 1	9.7
Apr-00	106.54	0.016	0.013	ND < 0.005	ND < 0.025	ND < 1	ND < 1	ND < 1	ND < 1	13
Oct-00	106.69	ND < 0.020	ND < 0.010	ND < 0.0050	ND < 0.025	1.8	ND < 1.0	2.9	ND < 1.0	8.7
Apr-01	106.83	0.014	0.025	ND < 0.0050	ND < 0.025	ND < 1.0	ND < 1.0	11	2.1	12

ND = Below detection limit as noted

MSL = Mean Sea Level

* 540/370 = original sample/duplicate sample (both results presented because duplicate result deviation is >20%)\2279-111\SPRDSHTS\02-04\[Apr02.xls]depth to Gage bottom

Appendix C
Severn Trent Laboratories Analytical Reports

Appendix D
Completed COC Forms

Chain of Custody Record

SEVERN TRENT SERVICES — Severn Trent Laboratories, Inc.

STL-4124 (0700)

Client	Project Manager	Date	Chain of Custody Number
CDM	SHARON WALLIN	4/16/02	053630
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of 2**
	949 752 5452	E2D160275	
City	**State**	**Zip Code**	**Site Contact**	**Lab Contact**
IRVINE				
Project Name and Location (State)	**Carrier/Waybill Number**
PITZER TECH	
Contract/Purchase Order/Quote No.	

200000

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis: ~~8260~~ pH	Cr-Cu-Cd	8260	Cr(VI) 7199	Special Instructions/ Conditions of Receipt
PTI-MW1S-053	4/16/02	1430		X			X						X	X			
									X					X	X		
										X					X	X	
											X					X	
PTI-MW1D-053	4/16/02	1520					X						X				
									X					X			
										X					X		
											X					X	
PTI ~~MW~~ TB01-053	4/16/02	1200													X		
PTI-EB01-053	4/16/02	1540					X						X				
									X					X			
										X					X		

Possible Hazard Identification

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal

☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required STANDARD TAT

☐ 24 Hours ☐ 48 Hours ☒ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By	4-16-02	16:40	1. Received By	4-16-02	16:40
2. Relinquished By	4-16-02	17:30	2. Received By	4/16/02	17:22
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

SEVERN TRENT SERVICES — Severn Trent Laboratories, Inc.

STL-4124 (0700)

Client	Project Manager	Date	Chain of Custody Number
CDM		4/16/02	053631
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page** 2 of 2
		E2D160275	
City / **State** / **Zip Code**	**Site Contact**	**Lab Contact**	
Project Name and Location (State)	**Carrier/Waybill Number**		
PITT PROJECT			
Contract/Purchase Order/Quote No.			

000003

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis: pH	Cr-Cu-Cd	8260	Cr(VI) 7199	Special Instructions/ Conditions of Receipt
PTI-EB01-053	4/16/02	1540		X							X					X	
PTI-MW3-053		1620					X						X				
									X					X			
										X					X		
											X					X	

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A lee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☒ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By	4-16-02	16:46	1. Received By	4-16-02	16:46
2. Relinquished By	4-16-02	17:30	2. Received By	4/16/02	17:20
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

SEVERN TRENT SERVICES — Severn Trent Laboratories, Inc.

STL-4124 (0700)

Client	Project Manager	Date	Chain of Custody Number
CDM	SHARON WALLIN	4/17/2002	050909
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of 3**
	949 752 5452	E2D170310	
City / **State** / **Zip Code**	**Site Contact**	**Lab Contact**	
IRVINE / CA			
Project Name and Location (State)	**Carrier/Waybill Number**		
PITT BIOTECH			
Contract/Purchase Order/Quote No.			

C00030

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis: PH	Cr-Cd	8260	Cr(VI) 7199	Special Instructions/ Conditions of Receipt
PTI-MW6D-053	4/17/02	0830		X			X						X				
									X					X			
										X					X		
											X					X	
PTI-MW6B-053	4/17/02	0945					X						X				
									X					X			
										X					X		
											X					X	
PTI-MW14S-053	4/17/02	1100					X						X				
									X					X			
										X					X		
											X					X	

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☒ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By	4-17-02	16:20	1. Received By	4-17-02	16:20
2. Relinquished By	4-17-02	17:00	2. Received By	4/17/02	1700
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

SEVERN TRENT SERVICES — Severn Trent Laboratories, Inc.

STL-4124 (0700)

Client	Project Manager	Date	Chain of Custody Number
CDM		4/17/02	050910
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 2 of 3**
		E2D170310	
City IRVINE	**State** CA	**Zip Code**	**Site Contact**	**Lab Contact**
Project Name and Location (State)	**Carrier/Waybill Number**
Contract/Purchase Order/Quote No.	

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis: pH	Cr - Cu - Cd	8260	Cr(VI) 7199	Special Instructions/ Conditions of Receipt
PT1-MW15D-053	4/17/02	1340		X			X						X				
									X					X			
										X					X		
											X					X	
PT1-EB02-053	4/17/02	1240					X						X				
									X					X			
										X					X		
											X					X	
PT1-MW15S-053	4/17/02	1445					X						X				
									X					X			
										X					X		
											X					X	

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☒ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By	4-17-02	16:20	1. Received By	4-17-02	16:20
2. Relinquished By	4-17-02	17:00	2. Received By	4/17/02	1700
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

SEVERN TRENT SERVICES — Severn Trent Laboratories, Inc.

STL-4124 (0700)

Client	Project Manager	Date	Chain of Custody Number
CDM		4/17/02	050074
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 3 of 3**
		E2D170310	
City / **State** / **Zip Code**	**Site Contact**	**Lab Contact**	
Project Name and Location (State)	**Carrier/Waybill Number**		
Contract/Purchase Order/Quote No.			

S00000

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis: pH	Cr-Cu-Cd	8260	Cr(VI) 7199	Special Instructions/ Conditions of Receipt
RT1-MW4A-053	4/17/02	1605		X			X						X				
									X					X			
										X					X		
											X					X	

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☒ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify)

1. Relinquished By	Date	Time	1. Received By	Date	Time
	4-17-02	16:20		4-17-02	16:20
2. Relinquished By	Date	Time	2. Received By	Date	Time
	4-17-02	17:00		4/17/02	1700
3. Relinquished By	Date	Time	3. Received By	Date	Time

Comments

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

SEVERN TRENT SERVICES — Severn Trent Laboratories, Inc.

STL-4124 (0700)

Client	Project Manager	Date	Chain of Custody Number
CDM	SHARON WALLIN	4/18/02	050080
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of 4**
	949 752 5452	E2D180308	
City	**State**	**Zip Code**	**Site Contact**	**Lab Contact**
IRVINE	CA			
Project Name and Location (State)	**Carrier/Waybill Number**	
PHIBROTECH		
Contract/Purchase Order/Quote No.		

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis: pH	Cr-Cu-Cd	8260	Cr(VI) 7199	Special Instructions/ Conditions of Receipt
PTI-MW4-053	4/18/02	0805		X			X						X				
									X					X			
										X					X		
											X					X	
PTI-MW35-053	4/18/02	1220					X						X				
								X	X					X			
										X					X		
											X					X	
PTI-MW16-053	4/18/02	0855					X						X				
									X					X			
										X					X		
											X					X	

000063

Possible Hazard Identification

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal

☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

(A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required

☐ 24 Hours ☐ 48 Hours ☒ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By	4-18-02	14:15	1. Received By	4-18-02	14:15
2. Relinquished By	4-18-02	15:00	2. Received By	4/18/02	15:00
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

SEVERN TRENT SERVICES — Severn Trent Laboratories, Inc.

STL-4124 (0700)

Client	Project Manager	Date	Chain of Custody Number
CDM		4/18/02	050081
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page** 2 of 4
		E20180308	
City / **State** / **Zip Code**	**Site Contact**	**Lab Contact**	
Project Name and Location (State)	**Carrier/Waybill Number**		
Contract/Purchase Order/Quote No.			

Analysis (Attach list if more space is needed)

Special Instructions/ Conditions of Receipt

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed	Soil	Containers & Preservatives: Unpres	H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	pH	Cr-Cu-Cd	Cr (VI) 7199	8260	Cr (VI) 7199
PTI-MW9-053	4/18/02	0950		X			X						X				
	↓	↓		↓					X					X			
										X						X	
											X						X
PTI-MW37-053	4/18/02	1155					X						X				
	↓	↓							X					X			
										X						X	
											X						X
PTI-MW7-053	4/18/02	1110					X						X				
	↓	↓							X					X			
										X						X	
				↓							X						X

Possible Hazard Identification

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal

☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required

☐ 24 Hours ☐ 48 Hours ☒ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By	4-18-02	14:15	1. Received By	4-18-02	14:15
2. Relinquished By	4-18-02	15:00	2. Received By	4/18/02	15.00
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

000064

Chain of Custody Record

SEVERN TRENT SERVICES — Severn Trent Laboratories, Inc.

STL-4124 (0700)

Client	Project Manager	Date	Chain of Custody Number
CDM		4/18/02	050083
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 3 of 4**
		E2D180308	
City / **State** / **Zip Code**	**Site Contact**	**Lab Contact**	
Project Name and Location (State)	**Carrier/Waybill Number**		
Contract/Purchase Order/Quote No.			

Analysis (Attach list if more space is needed)

Special Instructions/ Conditions of Receipt

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres	H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	pH	Cr-Cu-Cd	8260	Cr(VI) 7199
PT1-EB03-053	4/18/02	1235		X			X						X			
									X					X		
										X					X	
											X					X
PT1-MW11-053	4/18/02	1325		X			X						X			
							X		X					X		
									X	X					X	
										X	X					X
PT1-~~MW11~~ TB03-053	4/18/02	1200		X			X				X		X			
									X					X		
										X					X	

Possible Hazard Identification

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal

☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A lee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required

☐ 24 Hours ☐ 48 Hours ☒ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By	4-18-02	14:15	1. Received By	4-18-02	14:15
2. Relinquished By	4-18-02	15:00	2. Received By	4/18/02	15:00
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

SEVERN TRENT SERVICES — **Severn Trent Laboratories, Inc.**

STL-4124 (0700)

Client	Project Manager	Date	Chain of Custody Number
CDM		4/18/02	050082
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page** 4 of 4
		EZD180308	
City / **State** / **Zip Code**	**Site Contact**	**Lab Contact**	
Project Name and Location (State)	**Carrier/Waybill Number**		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed	Soil	Containers & Preservatives: Unpres	H2SO4	HNOS	HCl	NaOH	ZnAc/NaOH	Analysis: 8260	Special Instructions/ Conditions of Receipt
PT1-DI-053	4/18/02	1200		X						X			X	

000096

Possible Hazard Identification

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal

☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A lee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required

☐ 24 Hours ☐ 48 Hours ☒ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By	4-18-02	14:15	1. Received By	4-18-02	14:15
2. Relinquished By	4-18-02	15:00	2. Received By	4/18/02	15:00
3. Relinquished By			3. Received By		

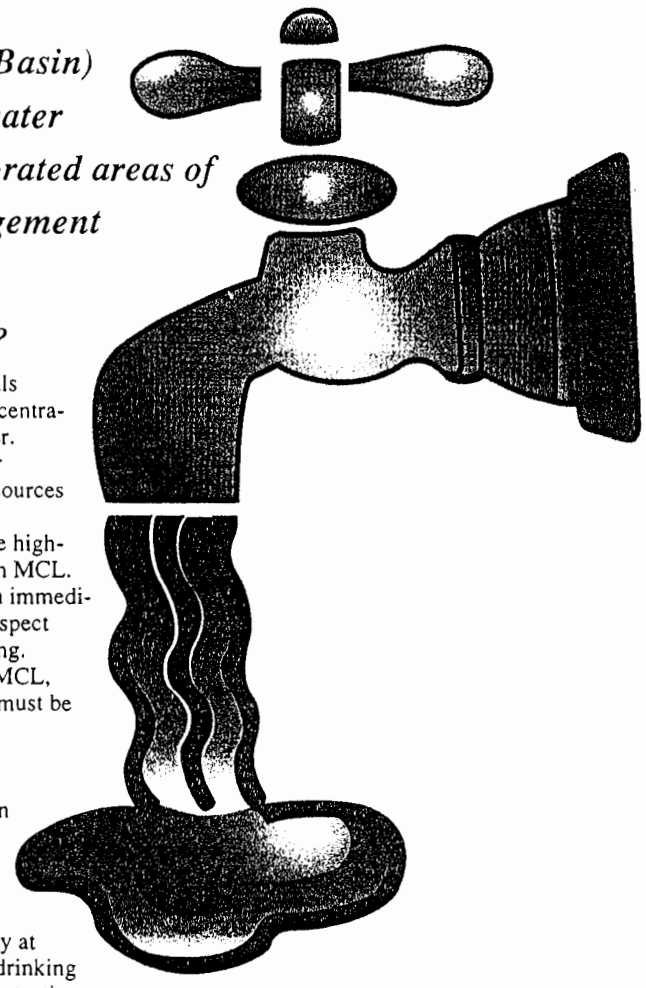
Comments

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Appendix E
Background Groundwater Concentrations

1999 Water Quality Report

This Annual Report is prepared by Central Basin Municipal Water District (Central Basin) as a service to the City of Santa Fe Springs. Central Basin provides imported surface water from the Metropolitan Water District of Southern California to 26 cities and unincorporated areas of Los Angeles County. Central Basin contributes to improving groundwater basin management through water quality, conservation and education programs.



Q Where does my drinking water come from?

A Your tap water comes from one or two major sources: groundwater and surface water. Your system pumps groundwater from one or more deep wells located predominately withing its service area. Your system may also use Metropolitan Water District of Southern California's imported surface water from the Colorado River and the State Water Project in Northern California. The quality of your system's groundwater is presented in this report. If your system used imported surface water in 1999, its quality is also described.

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity. Contaminants that may be present in source water include:

- Microbial contaminants, including viruses and bacteria, that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife;
- Inorganic contaminants, such as salts and metals, that can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming;
- Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses;
- Organic chemical contaminants, including synthetic and volatile organic chemicals, that are byproducts of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems;
- Radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities.

To ensure quality tap water, USEPA and the California Department of Health Services (CDHS) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. CDHS regulations also establish limits for contaminants in bottled water that must provide the same protection for public health.

Q Why do I see so much news coverage about the quality of tap water?

A All drinking water, including bottles water, may reasonably be expected to contain at least small amounts of some contaminants. As water travels over the surface of the land or through the ground, it can pick up substances resulting from the presence of animals or from human activity. The presence of contaminants does not necessarily indicate that water poses a health rick. More information about contaminants and potential health effects can be obtained by calling the federal Environmental Protection Agency's Safe Drinking Water Hotline (1-800-426-4791).

Q How is my drinking water tested?

A Your drinking water is protected from unsafe levels of chemicals and bacteria by regularly scheduled testing.Drinking water wells are tested weekly, monthly, quarterly, annually, or up to once every five years depending on the type of chemical, the vulnerability of the well to nearby potential sources of contamination, and historic water quality information. Wells that may have the potential to be contaminated are tested more frequently. Testing intervals are set by the California Department of Health Services.

Central Basing Municipal Water District administers the testing program for your water supplier's wells. A state-certified laboratory collects and tests well samples. The Metropolitan Water District extensively tests the quality of imported surface water separately. Your water supplier also tests its distribution system for bacteria, color, odor, appearance and disinfection by-products, and for lead and copper at selected customer's taps. Water quality testing is performed by state-certified laboratories and trained specialists.

Q What are drinking water standards?

A The federal Environmental Protection Agency sets regulations, or standards, that limit the amount of certain contaminants in tap water. In California, the Department of Health Services regulates tap water quality by enforcing standards that are at least as stringent as federal EPA standards.Historically, California standards are more stringent than the federal counterparts.

There are two types of standards. Primary standards protect you from chemicals that could potentially affect your health, such as toxic metals, pesticides, industrial solvents, and radioactive constituents.Secondary standards regulate chemicals that affect the aesthetic qualities of water, such as taste, odor and appearance. Regulations set a Maximum Contaminant Level (MCL) for each of the primary and secondary standards. The MCL is the highest level of a contaminant that is allowed in drinking water. Water suppliers must ensure water quality by complying with MCLs. Not all chemicals are regulated with MCLs. Lead and copper, for instance, are regulated by an Action Level. If either chemical exceeds its action level, a treatment process is required to reduce the levels in drinking water.

Public Health Goals (PHGs) are set by the California Environmental Protection Agency. PHGs provide more information on the quality of drinking water to customers, and are similar to their federal counterparts, Maximum Contaminant Level Goals (MCLGs). PHGs and MCLGs are levels that are of an advisory nature only.

Q How do I read the Water Quality Report?

A The first column of the water quality table lists chemicals detected in your water. The next column list the average concentration and range of concentrations found in your drinking water.

Following this are columns that list the MCL and PHG or MCLG, if appropriate. The last column describes the likely sources of contaminants in drinking water.

To review the quality of your drinking water, compare the highest concentration and MCL. Check for chemicals greater than MCL. Exceedence of a primary MCL does not usually constitute an immediate health threat. Rather, it requires the supplier to test the suspect well intensely for a short duration to confirm the initial finding. Confirming test results are averaged and, if greater than the MCL, the well must be treated to remove the chemical, or the well must be removed from service.

Q Should I take additional precautions?

A Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. The Environmental Protection Agency/Centers for Disease Control guidelines on appropriate means to lessen the risk of infection of Cryptosporidium and other microbial contaminants are available from the federal EPA's Safe Drinking Water Hotline (1-800-426-4791).

Q How can I participate in decisions on water issues that affect me?

A In the City of Santa Fe Springs, the public is welcome to attend City Council meetings on the second and fourth Thursday of each month at 7:00 p.m.

For More Information:

If you have specific questions about your system's drinking water quality, please contact:Ron Hughes at (562) 868-0511

Esto es una informacion importante.Por favor, si lo pueden traducir.

Results are from the most recent testing performed in accordance with state and federal drinking water regulations.

PRIMARY STANDARDS MANDATED FOR PUBLIC HEALTH		GROUNDWATER AVERAGE	GROUNDWATER RANGE	SURFACE WATER %<0.5	SURFACE WATER RANGE	PRIMARY MCL	MCLG or PHG	MAJOR SOURCES IN DRINKING WATER
CLARITY								
TURBIDITY (ntu) (a)		0.4	0.1-39	100%	0.09-0.1	TT	-	Soil runoff
MICROBIOLOGICAL (% POSITIVE)		AVERAGE	RANGE	AVERAGE	RANGE			
TOTAL COLIFORM BACTERIA (a)		0%	0%	0.04%	0-0.2%	5	0	Naturally present in the environment
FECAL COLIFORM BACTERIA (a)		0%	0%	0%	0%	0	0	Human and animal fecal waste
NO. OF ACUTE VIOLATIONS		0	0	0	0			
ORGANIC CHEMICALS (µg/l)								
TRICHLOROETHYLENE - TCE		1.2	ND-3.4	ND	ND	5	0	Discharge from metal degreasing sites and other factories
TRIHALOMETHANES, TOTAL-TTHMS (a) (b)		2	27-45	37	24-51	100	0	By-product of drinking water chorination
INORGANICS	Date Sampled (e)							
ARSENIC (µg/l)	1998-1999	4	ND-7	2	ND-3	50	-	Erosion of natural deposits, glass and electronics production wastes
COPPER (mg/l)	30 sites in 1998	0.34 (c)	ND-0.68	ND (c)	ND	1.3 AL	0.17 (d)	Corrosion of household plumbing
FLUORIDE (mg/l)	1998-1999	0.29	0.27-0.31	0.26	0.22-0.32	2	1 (d)	Erosion of natural deposits, water additive that promotes strong teeth
LEAD (µg/l)	30 sites in 1998	ND (c)	ND	ND (c)	ND	15 AL	2 (d)	Corrosion of household plumbing
NITRATE (mg/l as N)	1999	0.9	ND-1.8	ND	ND	10	10 (d)	Leaking from septic tanks and sewage; erosion of natural deposits
ALUMINUM (mg/l)	1998-1999	ND	ND	0.15	0.09-0.25	1	-	Erosion of natural deposits, surface water treatment process residue
RADIOLOGICAL - pCi/l	Analyzed 4 consecutive quarters every 4 years (results are from 1996 to 1999)							
GROSS ALPHA (h)		1.9	ND-6.6	4.9	2.4-8.1	15 (h)	0	Erosion of natural deposits
GROSS BETA		NA	NA	6.7	6.1-10.6	50 (h)	0	Decay of natural and man-made deposits
URANIUM		5.3	4.5-6.0	3.3	ND-4.8	20 (h)	0	Erosion of natural deposits

SECONDARY STANDARDS FOR AESTHETIC PURPOSES	GROUNDWATER AVERAGE	GROUNDWATER RANGE	SURFACE WATER AVERAGE	SURFACE WATER RANGE	PRIMARY MCL	MCLG or PHG	MAJOR SOURCES IN DRINKING WATER
CHLORIDE (mg/l)	50	34-66	71	65-78	500	-	Erosion of natural deposits, seawater influence
UNITS OF COLOR (a)	3	ND-10	2	1-2	15	-	Naturally-occurring oragnic materials
THRESHOLD ODOR NO. (ton) (a)	1	1-2	(f)	(f)	3	-	Naturally-occurring oragnic materials
CONDUCTIVITY (umhos/cm)	655	470-840	835	781-938	1600	-	Seawater influence, disolved minerals
SULFATE (mg/l)	112	54-170	195	175-234	500	-	Erosion of natural deposits
TOTAL DISSOLVED SOLIDS (mg/l)	399	262-535	514	478-588	1000	-	Erosion of natural deposits
MANGANESE (µg/l)	13	ND-26	ND	ND	50	-	Erosion of natural deposits

ADDITIONAL CONSTITUENTS OF INTEREST	GROUNDWATER AVERAGE	GROUNDWATER RANGE	SURFACE WATER AVERAGE	SURFACE WATER RANGE
pH (std unit)	7.8	7.6-8.0	8.1	8.0-8.1
TOTAL HARDNESS (mg/l)	221	105-337	250	228-289
CALCIUM (mg/l)	67	34-99	62	56-73
MAGNESIUM (mg/l)	13	5-22	24	22-27
SODIUM (mg/l)	60	53-67	77	70-87
POTASSIUM (mg/l)	2.9	2.2-3.6	3.8	3.6-4.1
PERCHLORATE (µg/l) (i)	ND	ND	ND	ND-6
HALOACETIC ACIDS (µg/l)	NA	NA	28	9.5-31
HALOACETONITRILES (µg/l)	NA	NA	7.7	4.8-12
CHLOROPICRIN (µg/l)	NA	NA	0.1	ND-0.4
HALOKETONES (µg/l)	NA	NA	1.7	1-3.2
CHLORAL HYDRATE (µg/l)	NA	NA	4.0	1.5-6.8
TOTAL ORGANIC HALOGENS (TOX) (µg/l)	NA	NA	15	72-174
CYANOGEN CHLORIDE (µg/l)	NA	NA	1.9	ND-3.1
RADON (pCi/l)	228	171-318	ND	ND-141

FOOTNOTES

(a) Compliance samples collected from points in the distribution system.
(b) Average and range calculated by running average.
(c) 90th percentile from the most recent sampling at selected customer taps.
(d) California Public Health Goal (PHG). Other advisory levels listed in this column are federal Maximum Contaminant Level Goals (MCLGs).
(e) Indicates dates sampled for groundwater sources only.
(f) Metropolitan Water District of Southern California uses a flavor-profile test that more accurately detects odors.
(g) Gross alpha standard also includes Radium-226 standard.
(h) MCL compliance based on 4 consecutive quarters of sampling. MCL standard is for combined Radium 226 plus 228.
(i) The California Department of Health Services set an Action Level of 18 µg/l in May 1997 and is evaluating perchlorate as a state primary drinking water standard. Health effects to date show that perchlorate affects the thyroid gland.

SPECIAL NOTE ON RADON: Radon is a radioactive gas that you cannot taste, see or smell, and is a known human carcinogen. It is found throughout the country. Radon can move up through the ground and into a home through cracks and holes in the foundation. Radon can build to high levels in all types of homes. Radon can also get into indoor air when released from tap water from showering and other household activities. Radon entering the home through tap water is a small source compared to radon entering the home through soil. Tap water contributes less than 5% of the total amount of radon in indoor air. If you are concerned about radon in your home, an easy and inexpensive test can show you how much radon is in your home's indoor air. There are simple and inexpensive ways to fix your home if the level of radon in the air is 4 picoCuries per liter (pCi/L) of air or higher. For additional information, call your State radon program or call EPA's Radon Hotline (800-SOS-RADON).

TERMS:

Maximum Contaminant Level (MCL): The highest level of a contaminent that is allowed in drinking water. Primary MCLs are set as close to the PHGs (MCLGs) as is economically and technology feasible. Secondary MCLs are set to protect the odor, taste and appearance of dmking water.

Maximum Contaminant Level Goal (MCLG): The level of a contaminent in drinking water below which there is no known or expected risk to health. MCLGs are set by the U.S. Environmental Protection Agency.

Public Health Goal or PHG: The level of a contaminent in drinking water below which there is no known or expected risk to health. PHGs are set by the California Environmental Protection Agency

Treatment Technique (TT): A required process intended to reduce the level of a contaminant in drinking water.

Regulatory Action Level (AL): The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

Primary Drinking Water Standard or PDWS: MCLs for contaminents that affect health along with their monitoring and reporting requirements, and water treatment requirements.

mg/l = milligrams per liter (parts per million)
µg/l = micrograms per liter (parts per billion)
pCi/l = picoCuries per liter
umhos/cm = micromhos per centimeter
ND = constituent not detected at the reporting limit
NA = constituent not analyzed
< = constituent not detected in any samples at the reporting limit

Appendix F
Statistical Analysis

Appendix F-1
Calculation of Upper Tolerance Limits for Background

SUMMARY OF UPPER TOLERANCE LEVEL CALCULATIONS

Quarterly Background Data: January 1989 to April 2002

Southern California Chemical

POISSON DISTRIBUTED UPPER TOLERANCE LEVEL

COMPOUND	Hexa Chromium	Total Chromium	Cadmium	Copper	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Trichloroethene
Percent Detected	3.8%	7.7%	1.9%	21.2%	1.9%	7.7%	25.0%	26.9%	NOT
Sample number(n)	52	52	52	52	52	52	52	52	CALC.
Tn	0.5922	0.4361	0.1434	0.7493	17.6550	30.1050	44.7050	77.9550	
2Tn+2	3.18	2.87	2.29	3.50	37.31	62.21	91.41	157.91	
Chi Squared @95% of dis	7.81	5.99	5.99	7.81	52.19	81.38	114.27	187.24	
lamda Tn	0.239	0.165	0.132	0.263	18.724	48.680	100.435	284.297	
Two time Lamda Tn	0.479	0.331	0.263	0.526	37.448	97.360	200.870	568.594	
Beta cov. @95%, deg fr.	4	3	3	4	54	122	236	626	
k, from 2k+2 deg fr.	1.00	0.50	0.50	1.00	26.00	60.00	117.00	312.00	

AITCHISON ADJUSTMENT AND CALCULATION OF UPPER TOLERANCE LEVELS

Number of ND(d)	NOT	48	NOT	41	NOT	48	39	38	NO ADJ. REQ.
Number of values(n)	CALC.	52	CALC.	52	CALC.	52	52	52	
Mean of det values		0.0475		0.029		1.650	1.977	4.050	
STD of det values		0.041		0.010		0.420	0.738	1.435	
Atch. Adj. mean/mean(1)		0.004		0.006		0.127	0.494	1.090	11.798
Atch. Adj. std./std. (1)		0.016		0.013		0.456	0.936	1.953	5.068
K for Tolerance Limit		2.353		1.812		2.353	1.782	1.771	1.676
Adjusted Tol. Limit		0.042		0.029		1.199	2.162	4.549	
Unadjusted Tol. Limit									20.291

(1) Unadjusted mean and std. used to compute upper tolerance level for TCE

Appendix F-2
Nonparametric Kruskal-Wallis Mann-Whitney U Test Results

IMPORT successfully completed.

SYSTAT Rectangular file C:\CDM\Phibro\Apr02\1-11.syd,
created Sun May 26, 2002 at 10:58:38, contains variables:

WELL$ PARAM_ID$ VALUE LN_VALUE HD_VALUE HD_LN_VALU

The following results are for:
PARAM_ID$ = BEN

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-11, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 104 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-11	52	3295.500
MW-1S	52	2164.500

Mann-Whitney U test statistic = 1917.500
Probability is 0.000
Chi-square approximation = 15.143 with 1 df

The following results are for:
PARAM_ID$ = CD

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-11, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 104 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-11	52	2681.000
MW-1S	52	2779.000

Mann-Whitney U test statistic = 1303.000
Probability is 0.629
Chi-square approximation = 0.234 with 1 df

The following results are for:
PARAM_ID$ = CU

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-11, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 104 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group Count Rank Sum

MW-11 52 2802.000
MW-1S 52 2658.000
Mann-Whitney U test statistic = 1424.000
Probability is 0.607
Chi-square approximation = 0.265 with 1 df

The following results are for:
PARAM_ID$ = EBN

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-11, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 104 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group Count Rank Sum

MW-11 52 3998.500
MW-1S 52 1461.500
Mann-Whitney U test statistic = 2620.500
Probability is 0.000
Chi-square approximation = 70.956 with 1 df

The following results are for:
PARAM_ID$ = HCR

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-11, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 104 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group Count Rank Sum

MW-11 52 2683.500
MW-1S 52 2776.500
Mann-Whitney U test statistic = 1305.500
Probability is 0.698
Chi-square approximation = 0.150 with 1 df

The following results are for:
PARAM_ID$ = TCE

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-11, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 104 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group Count Rank Sum

MW-11 52 3978.000
MW-1S 52 1482.000
Mann-Whitney U test statistic = 2600.000
Probability is 0.000
Chi-square approximation = 65.857 with 1 df

The following results are for:

PARAM_ID$ = TCR

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-11, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 104 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-11	52	2749.000
MW-1S	52	2711.000

Mann-Whitney U test statistic = 1371.000
Probability is 0.855
Chi-square approximation = 0.034 with 1 df

The following results are for:
PARAM_ID$ = TOL

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-11, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 102 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-11	51	3611.500
MW-1S	51	1641.500

Mann-Whitney U test statistic = 2285.500
Probability is 0.000
Chi-square approximation = 48.195 with 1 df

The following results are for:
PARAM_ID$ = TX

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-11, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 102 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-11	51	3610.500
MW-1S	51	1642.500

Mann-Whitney U test statistic = 2284.500
Probability is 0.000
Chi-square approximation = 45.046 with 1 df

The following results are for:
PARAM_ID$ = TXL

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-11, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 2 cases
Dependent variable is VALUE

Grouping variable is WELL$

Group	Count	Rank Sum
MW-11	1	2.000
MW-1S	1	1.000

Mann-Whitney U test statistic = 1.000
Probability is 0.317
Chi-square approximation = 1.000 with 1 df

SYSTAT Rectangular file C:\CDM\Phibro\Apr02\1-14s.syd,
created Sun May 26, 2002 at 10:58:40, contains variables:

WELL$ PARAM_ID$ VALUE LN_VALUE HD_VALUE HD_LN_VALU

The following results are for:
PARAM_ID$ = BEN

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-14S, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 96 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-14S	44	2527.500
MW-1S	52	2128.500

Mann-Whitney U test statistic = 1537.500
Probability is 0.001
Chi-square approximation = 10.244 with 1 df

The following results are for:
PARAM_ID$ = CD

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-14S, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 96 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-14S	44	2203.500
MW-1S	52	2452.500

Mann-Whitney U test statistic = 1213.500
Probability is 0.419
Chi-square approximation = 0.654 with 1 df

The following results are for:
PARAM_ID$ = CU

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-14S, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 96 cases

Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-14S	44	2542.000
MW-1S	52	2114.000

Mann-Whitney U test statistic = 1552.000
Probability is 0.001
Chi-square approximation = 10.234 with 1 df

The following results are for:
PARAM_ID$ = EBN

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-14S, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 96 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-14S	44	2944.500
MW-1S	52	1711.500

Mann-Whitney U test statistic = 1954.500
Probability is 0.000
Chi-square approximation = 38.773 with 1 df

The following results are for:
PARAM_ID$ = HCR

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-14S, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 97 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-14S	45	2619.000
MW-1S	52	2134.000

Mann-Whitney U test statistic = 1584.000
Probability is 0.001
Chi-square approximation = 10.852 with 1 df

The following results are for:
PARAM_ID$ = TCE

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-14S, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 96 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-14S	44	3243.000
MW-1S	52	1413.000

Mann-Whitney U test statistic = 2253.000

Probability is 0.000
Chi-square approximation = 66.541 with 1 df

The following results are for:
PARAM_ID$ = TCR

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-14S, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 96 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-14S	44	3000.000
MW-1S	52	1656.000

Mann-Whitney U test statistic = 2010.000
Probability is 0.000
Chi-square approximation = 49.332 with 1 df

The following results are for:
PARAM_ID$ = TOL

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-14S, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 94 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-14S	43	2510.000
MW-1S	51	1955.000

Mann-Whitney U test statistic = 1564.000
Probability is 0.000
Chi-square approximation = 17.664 with 1 df

The following results are for:
PARAM_ID$ = TX

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-14S, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 94 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-14S	43	2509.500
MW-1S	51	1955.500

Mann-Whitney U test statistic = 1563.500
Probability is 0.000
Chi-square approximation = 14.009 with 1 df

The following results are for:
PARAM_ID$ = TXL

Categorical values encountered during processing are:
WELL$ (2 levels)

MW-14S, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 2 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-14S	1	2.000
MW-1S	1	1.000

Mann-Whitney U test statistic = 1.000
Probability is 0.317
Chi-square approximation = 1.000 with 1 df

SYSTAT Rectangular file C:\CDM\Phibro\Apr02\1-15s.syd,
created Sun May 26, 2002 at 10:58:42, contains variables:

WELL$ PARAM_ID$ VALUE LN_VALUE HD_VALUE HD_LN_VALU

The following results are for:
PARAM_ID$ = BEN

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-15S, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 97 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-15S	45	2251.000
MW-1S	52	2502.000

Mann-Whitney U test statistic = 1216.000
Probability is 0.684
Chi-square approximation = 0.165 with 1 df

The following results are for:
PARAM_ID$ = CD

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-15S, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 97 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-15S	45	2334.000
MW-1S	52	2419.000

Mann-Whitney U test statistic = 1299.000
Probability is 0.138
Chi-square approximation = 2.200 with 1 df

The following results are for:
PARAM_ID$ = CU

Categorical values encountered during processing are:

WELL$ (2 levels)
MW-15S, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 97 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-15S	45	2156.000
MW-1S	52	2597.000

Mann-Whitney U test statistic = 1121.000
Probability is 0.685
Chi-square approximation = 0.164 with 1 df

The following results are for:
PARAM_ID$ = EBN

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-15S, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 97 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-15S	45	2625.500
MW-1S	52	2127.500

Mann-Whitney U test statistic = 1590.500
Probability is 0.001
Chi-square approximation = 11.059 with 1 df

The following results are for:
PARAM_ID$ = HCR

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-15S, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 98 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-15S	46	2206.000
MW-1S	52	2645.000

Mann-Whitney U test statistic = 1125.000
Probability is 0.531
Chi-square approximation = 0.393 with 1 df

The following results are for:
PARAM_ID$ = TCE

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-15S, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 97 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum

MW-15S 45 1484.000
MW-1S 52 3269.000
Mann-Whitney U test statistic = 449.000
Probability is 0.000
Chi-square approximation = 27.227 with 1 df

The following results are for:
PARAM_ID$ = TCR

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-15S, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 97 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group Count Rank Sum

MW-15S 45 2429.000
MW-1S 52 2324.000
Mann-Whitney U test statistic = 1394.000
Probability is 0.024
Chi-square approximation = 5.060 with 1 df

The following results are for:
PARAM_ID$ = TOL

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-15S, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 95 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group Count Rank Sum

MW-15S 44 2306.000
MW-1S 51 2254.000
Mann-Whitney U test statistic = 1316.000
Probability is 0.062
Chi-square approximation = 3.496 with 1 df

The following results are for:
PARAM_ID$ = TX

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-15S, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 95 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group Count Rank Sum

MW-15S 44 2287.000
MW-1S 51 2273.000
Mann-Whitney U test statistic = 1297.000
Probability is 0.155
Chi-square approximation = 2.019 with 1 df

The following results are for:

PARAM_ID$ = TXL

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-15S, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 2 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-15S	1	1.500
MW-1S	1	1.500

Mann-Whitney U test statistic = 0.500
Probability is 1.000
Chi-square approximation = 0.000 with 1 df

SYSTAT Rectangular file C:\CDM\Phibro\Apr02\1-16.syd,
created Sun May 26, 2002 at 10:58:44, contains variables:

WELL$ PARAM_ID$ VALUE LN_VALUE HD_VALUE HD_LN_VALU

The following results are for:
PARAM_ID$ = BEN

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-16, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 91 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-16	39	2333.500
MW-1S	52	1852.500

Mann-Whitney U test statistic = 1553.500
Probability is 0.000
Chi-square approximation = 22.097 with 1 df

The following results are for:
PARAM_ID$ = CD

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-16, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 91 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-16	39	1782.000
MW-1S	52	2404.000

Mann-Whitney U test statistic = 1002.000
Probability is 0.853
Chi-square approximation = 0.035 with 1 df

The following results are for:
PARAM_ID$ = CU

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-16, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 91 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-16	39	1845.000
MW-1S	52	2341.000

Mann-Whitney U test statistic = 1065.000
Probability is 0.646
Chi-square approximation = 0.211 with 1 df

The following results are for:
PARAM_ID$ = EBN

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-16, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 91 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-16	39	2619.000
MW-1S	52	1567.000

Mann-Whitney U test statistic = 1839.000
Probability is 0.000
Chi-square approximation = 47.523 with 1 df

The following results are for:
PARAM_ID$ = HCR

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-16, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 91 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-16	39	1701.500
MW-1S	52	2484.500

Mann-Whitney U test statistic = 921.500
Probability is 0.345
Chi-square approximation = 0.892 with 1 df

The following results are for:
PARAM_ID$ = TCE

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-16, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 91 cases

Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-16	39	2777.500
MW-1S	52	1408.500

Mann-Whitney U test statistic = 1997.500
Probability is 0.000
Chi-square approximation = 62.264 with 1 df

The following results are for:
PARAM_ID$ = TCR

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-16, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 91 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-16	39	1816.000
MW-1S	52	2370.000

Mann-Whitney U test statistic = 1036.000
Probability is 0.745
Chi-square approximation = 0.106 with 1 df

The following results are for:
PARAM_ID$ = TOL

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-16, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 89 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-16	38	2318.500
MW-1S	51	1686.500

Mann-Whitney U test statistic = 1577.500
Probability is 0.000
Chi-square approximation = 31.871 with 1 df

The following results are for:
PARAM_ID$ = TX

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-16, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 89 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-16	38	2281.000
MW-1S	51	1724.000

Mann-Whitney U test statistic = 1540.000

Probability is 0.000
Chi-square approximation = 23.935 with 1 df

The following results are for:
PARAM_ID$ = TXL

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-16, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 2 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-16	1	2.000
MW-1S	1	1.000

Mann-Whitney U test statistic = 1.000
Probability is 0.317
Chi-square approximation = 1.000 with 1 df

SYSTAT Rectangular file C:\CDM\Phibro\Apr02\1-3.syd,
created Sun May 26, 2002 at 10:58:45, contains variables:

WELL$ PARAM_ID$ VALUE LN_VALUE HD_VALUE HD_LN_VALU

The following results are for:
PARAM_ID$ = BEN

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-3

Kruskal-Wallis One-Way Analysis of Variance for 104 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	2380.500
MW-3	52	3079.500

Mann-Whitney U test statistic = 1002.500
Probability is 0.010
Chi-square approximation = 6.672 with 1 df

The following results are for:
PARAM_ID$ = CD

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-3

Kruskal-Wallis One-Way Analysis of Variance for 104 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	2730.000
MW-3	52	2730.000

Mann-Whitney U test statistic = 1352.000
Probability is 1.000
Chi-square approximation = 0.000 with 1 df

The following results are for:
PARAM_ID$ = CU

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-3

Kruskal-Wallis One-Way Analysis of Variance for 104 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	2802.500
MW-3	52	2657.500

Mann-Whitney U test statistic = 1424.500
Probability is 0.583
Chi-square approximation = 0.302 with 1 df

The following results are for:
PARAM_ID$ = EBN

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-3

Kruskal-Wallis One-Way Analysis of Variance for 104 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	2056.000
MW-3	52	3404.000

Mann-Whitney U test statistic = 678.000
Probability is 0.000
Chi-square approximation = 21.952 with 1 df

The following results are for:
PARAM_ID$ = HCR

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-3

Kruskal-Wallis One-Way Analysis of Variance for 105 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	2762.000
MW-3	53	2803.000

Mann-Whitney U test statistic = 1384.000
Probability is 0.961
Chi-square approximation = 0.002 with 1 df

The following results are for:
PARAM_ID$ = TCE

Categorical values encountered during processing are:

WELL$ (2 levels)
MW-1S, MW-3

Kruskal-Wallis One-Way Analysis of Variance for 104 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	1616.500
MW-3	52	3843.500

Mann-Whitney U test statistic = 238.500
Probability is 0.000
Chi-square approximation = 52.449 with 1 df

The following results are for:
PARAM_ID$ = TCR

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-3

Kruskal-Wallis One-Way Analysis of Variance for 104 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	2656.500
MW-3	52	2803.500

Mann-Whitney U test statistic = 1278.500
Probability is 0.434
Chi-square approximation = 0.612 with 1 df

The following results are for:
PARAM_ID$ = TOL

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-3

Kruskal-Wallis One-Way Analysis of Variance for 102 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	51	2083.000
MW-3	51	3170.000

Mann-Whitney U test statistic = 757.000
Probability is 0.000
Chi-square approximation = 19.175 with 1 df

The following results are for:
PARAM_ID$ = TX

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-3

Kruskal-Wallis One-Way Analysis of Variance for 102 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum

MW-1S 51 2189.000
MW-3 51 3064.000
Mann-Whitney U test statistic = 863.000
Probability is 0.002
Chi-square approximation = 9.722 with 1 df

The following results are for:
PARAM_ID$ = TXL

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-3

Kruskal-Wallis One-Way Analysis of Variance for 2 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group Count Rank Sum

MW-1S 1 1.000
MW-3 1 2.000
Mann-Whitney U test statistic = 0.000
Probability is 0.317
Chi-square approximation = 1.000 with 1 df

SYSTAT Rectangular file C:\CDM\Phibro\Apr02\1-4.syd,
created Sun May 26, 2002 at 10:58:47, contains variables:

WELL$ PARAM_ID$ VALUE LN_VALUE HD_VALUE HD_LN_VALU

The following results are for:
PARAM_ID$ = BEN

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-4

Kruskal-Wallis One-Way Analysis of Variance for 107 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group Count Rank Sum

MW-1S 52 1760.500
MW-4 55 4017.500
Mann-Whitney U test statistic = 382.500
Probability is 0.000
Chi-square approximation = 46.210 with 1 df

The following results are for:
PARAM_ID$ = CD

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-4

Kruskal-Wallis One-Way Analysis of Variance for 107 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	1405.000
MW-4	55	4373.000

Mann-Whitney U test statistic = 27.000
Probability is 0.000
Chi-square approximation = 82.632 with 1 df

The following results are for:
PARAM_ID$ = CU

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-4

Kruskal-Wallis One-Way Analysis of Variance for 107 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	2526.000
MW-4	55	3252.000

Mann-Whitney U test statistic = 1148.000
Probability is 0.056
Chi-square approximation = 3.659 with 1 df

The following results are for:
PARAM_ID$ = EBN

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-4

Kruskal-Wallis One-Way Analysis of Variance for 107 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	1511.500
MW-4	55	4266.500

Mann-Whitney U test statistic = 133.500
Probability is 0.000
Chi-square approximation = 68.370 with 1 df

The following results are for:
PARAM_ID$ = HCR

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-4

Kruskal-Wallis One-Way Analysis of Variance for 107 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	1378.000
MW-4	55	4400.000

Mann-Whitney U test statistic = 0.000
Probability is 0.000
Chi-square approximation = 83.181 with 1 df

The following results are for:
PARAM_ID$ = TCE

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-4

Kruskal-Wallis One-Way Analysis of Variance for 107 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	1379.000
MW-4	55	4399.000

Mann-Whitney U test statistic = 1.000
Probability is 0.000
Chi-square approximation = 79.385 with 1 df

The following results are for:
PARAM_ID$ = TCR

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-4

Kruskal-Wallis One-Way Analysis of Variance for 107 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	1378.000
MW-4	55	4400.000

Mann-Whitney U test statistic = 0.000
Probability is 0.000
Chi-square approximation = 86.301 with 1 df

The following results are for:
PARAM_ID$ = TOL

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-4

Kruskal-Wallis One-Way Analysis of Variance for 105 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	51	1544.000
MW-4	54	4021.000

Mann-Whitney U test statistic = 218.000
Probability is 0.000
Chi-square approximation = 61.570 with 1 df

The following results are for:
PARAM_ID$ = TX

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-4

Kruskal-Wallis One-Way Analysis of Variance for 104 cases

Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	51	1406.500
MW-4	53	4053.500

Mann-Whitney U test statistic = 80.500
Probability is 0.000
Chi-square approximation = 70.570 with 1 df

The following results are for:
PARAM_ID$ = TXL

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-4

Kruskal-Wallis One-Way Analysis of Variance for 3 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	1	1.000
MW-4	2	5.000

Mann-Whitney U test statistic = 0.000
Probability is 0.221
Chi-square approximation = 1.500 with 1 df

SYSTAT Rectangular file C:\CDM\Phibro\Apr02\1-6B.syd,
created Sun May 26, 2002 at 10:58:49, contains variables:

WELL$ PARAM_ID$ VALUE LN_VALUE HD_VALUE HD_LN_VALU

The following results are for:
PARAM_ID$ = BEN

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-6B

Kruskal-Wallis One-Way Analysis of Variance for 100 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	2563.000
MW-6B	48	2487.000

Mann-Whitney U test statistic = 1185.000
Probability is 0.605
Chi-square approximation = 0.267 with 1 df

The following results are for:
PARAM_ID$ = CD

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-6B

Kruskal-Wallis One-Way Analysis of Variance for 100 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	2574.000
MW-6B	48	2476.000

Mann-Whitney U test statistic = 1196.000
Probability is 0.552
Chi-square approximation = 0.355 with 1 df

The following results are for:
PARAM_ID$ = CU

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-6B

Kruskal-Wallis One-Way Analysis of Variance for 100 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	2726.500
MW-6B	48	2323.500

Mann-Whitney U test statistic = 1348.500
Probability is 0.417
Chi-square approximation = 0.660 with 1 df

The following results are for:
PARAM_ID$ = EBN

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-6B

Kruskal-Wallis One-Way Analysis of Variance for 100 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	2317.500
MW-6B	48	2732.500

Mann-Whitney U test statistic = 939.500
Probability is 0.018
Chi-square approximation = 5.561 with 1 df

The following results are for:
PARAM_ID$ = HCR

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-6B

Kruskal-Wallis One-Way Analysis of Variance for 101 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	2764.000
MW-6B	49	2387.000

Mann-Whitney U test statistic = 1386.000
Probability is 0.340
Chi-square approximation = 0.911 with 1 df

The following results are for:
PARAM_ID$ = TCE

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-6B

Kruskal-Wallis One-Way Analysis of Variance for 100 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	2921.500
MW-6B	48	2128.500

Mann-Whitney U test statistic = 1543.500
Probability is 0.041
Chi-square approximation = 4.160 with 1 df

The following results are for:
PARAM_ID$ = TCR

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-6B

Kruskal-Wallis One-Way Analysis of Variance for 100 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	2408.000
MW-6B	48	2642.000

Mann-Whitney U test statistic = 1030.000
Probability is 0.028
Chi-square approximation = 4.830 with 1 df

The following results are for:
PARAM_ID$ = TOL

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-6B

Kruskal-Wallis One-Way Analysis of Variance for 98 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	51	2281.500
MW-6B	47	2569.500

Mann-Whitney U test statistic = 955.500
Probability is 0.036
Chi-square approximation = 4.391 with 1 df

The following results are for:
PARAM_ID$ = TX

Categorical values encountered during processing are:

WELL$ (2 levels)
MW-1S, MW-6B

Kruskal-Wallis One-Way Analysis of Variance for 98 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	51	2364.000
MW-6B	47	2487.000

Mann-Whitney U test statistic = 1038.000
Probability is 0.203
Chi-square approximation = 1.622 with 1 df

The following results are for:
PARAM_ID$ = TXL

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-6B

Kruskal-Wallis One-Way Analysis of Variance for 2 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	1	1.500
MW-6B	1	1.500

Mann-Whitney U test statistic = 0.500
Probability is 1.000
Chi-square approximation = 0.000 with 1 df

SYSTAT Rectangular file C:\CDM\Phibro\Apr02\1-7.syd,
created Sun May 26, 2002 at 10:58:51, contains variables:

WELL$ PARAM_ID$ VALUE LN_VALUE HD_VALUE HD_LN_VALU

The following results are for:
PARAM_ID$ = BEN

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-7

Kruskal-Wallis One-Way Analysis of Variance for 104 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	2284.000
MW-7	52	3176.000

Mann-Whitney U test statistic = 906.000
Probability is 0.001
Chi-square approximation = 10.095 with 1 df

The following results are for:
PARAM_ID$ = CD

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-7

Kruskal-Wallis One-Way Analysis of Variance for 104 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	2634.500
MW-7	52	2825.500

Mann-Whitney U test statistic = 1256.500
Probability is 0.345
Chi-square approximation = 0.890 with 1 df

The following results are for:
PARAM_ID$ = CU

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-7

Kruskal-Wallis One-Way Analysis of Variance for 104 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	2351.500
MW-7	52	3108.500

Mann-Whitney U test statistic = 973.500
Probability is 0.008
Chi-square approximation = 6.995 with 1 df

The following results are for:
PARAM_ID$ = EBN

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-7

Kruskal-Wallis One-Way Analysis of Variance for 104 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	2191.000
MW-7	52	3269.000

Mann-Whitney U test statistic = 813.000
Probability is 0.000
Chi-square approximation = 14.558 with 1 df

The following results are for:
PARAM_ID$ = HCR

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-7

Kruskal-Wallis One-Way Analysis of Variance for 104 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	2777.500
MW-7	52	2682.500

Mann-Whitney U test statistic = 1399.500
Probability is 0.699
Chi-square approximation = 0.149 with 1 df

The following results are for:
PARAM_ID$ = TCE

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-7

Kruskal-Wallis One-Way Analysis of Variance for 104 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	1451.000
MW-7	52	4009.000

Mann-Whitney U test statistic = 73.000
Probability is 0.000
Chi-square approximation = 69.179 with 1 df

The following results are for:
PARAM_ID$ = TCR

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-7

Kruskal-Wallis One-Way Analysis of Variance for 104 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	2583.500
MW-7	52	2876.500

Mann-Whitney U test statistic = 1205.500
Probability is 0.148
Chi-square approximation = 2.088 with 1 df

The following results are for:
PARAM_ID$ = TOL

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-7

Kruskal-Wallis One-Way Analysis of Variance for 102 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	51	2230.500
MW-7	51	3022.500

Mann-Whitney U test statistic = 904.500
Probability is 0.001
Chi-square approximation = 11.369 with 1 df

The following results are for:
PARAM_ID$ = TX

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-7

Kruskal-Wallis One-Way Analysis of Variance for 102 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	51	2391.000
MW-7	51	2862.000

Mann-Whitney U test statistic = 1065.000
Probability is 0.084
Chi-square approximation = 2.978 with 1 df

The following results are for:
PARAM_ID$ = TXL

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-7

Kruskal-Wallis One-Way Analysis of Variance for 2 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	1	1.500
MW-7	1	1.500

Mann-Whitney U test statistic = 0.500
Probability is 1.000
Chi-square approximation = 0.000 with 1 df

SYSTAT Rectangular file C:\CDM\Phibro\Apr02\1-9.syd,
created Sun May 26, 2002 at 10:58:53, contains variables:

WELL$ PARAM_ID$ VALUE LN_VALUE HD_VALUE HD_LN_VALU

The following results are for:
PARAM_ID$ = BEN

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-9

Kruskal-Wallis One-Way Analysis of Variance for 107 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	1789.500
MW-9	55	3988.500

Mann-Whitney U test statistic = 411.500
Probability is 0.000
Chi-square approximation = 43.276 with 1 df

The following results are for:
PARAM_ID$ = CD

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-9

Kruskal-Wallis One-Way Analysis of Variance for 107 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	2764.500
MW-9	55	3013.500

Mann-Whitney U test statistic = 1386.500
Probability is 0.662
Chi-square approximation = 0.191 with 1 df

The following results are for:
PARAM_ID$ = CU

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-9

Kruskal-Wallis One-Way Analysis of Variance for 107 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	2847.000
MW-9	55	2931.000

Mann-Whitney U test statistic = 1469.000
Probability is 0.781
Chi-square approximation = 0.077 with 1 df

The following results are for:
PARAM_ID$ = EBN

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-9

Kruskal-Wallis One-Way Analysis of Variance for 107 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	1641.500
MW-9	55	4136.500

Mann-Whitney U test statistic = 263.500
Probability is 0.000
Chi-square approximation = 55.816 with 1 df

The following results are for:
PARAM_ID$ = HCR

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-9

Kruskal-Wallis One-Way Analysis of Variance for 107 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	2293.500
MW-9	55	3484.500

Mann-Whitney U test statistic = 915.500
Probability is 0.000
Chi-square approximation = 13.451 with 1 df

The following results are for:
PARAM_ID$ = TCE

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-9

Kruskal-Wallis One-Way Analysis of Variance for 107 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	1387.500
MW-9	55	4390.500

Mann-Whitney U test statistic = 9.500
Probability is 0.000
Chi-square approximation = 78.427 with 1 df

The following results are for:
PARAM_ID$ = TCR

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-9

Kruskal-Wallis One-Way Analysis of Variance for 107 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	2207.500
MW-9	55	3570.500

Mann-Whitney U test statistic = 829.500
Probability is 0.000
Chi-square approximation = 20.528 with 1 df

The following results are for:
PARAM_ID$ = TOL

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-9

Kruskal-Wallis One-Way Analysis of Variance for 105 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	51	1621.500
MW-9	54	3943.500

Mann-Whitney U test statistic = 295.500
Probability is 0.000
Chi-square approximation = 53.983 with 1 df

The following results are for:
PARAM_ID$ = TX

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-9

Kruskal-Wallis One-Way Analysis of Variance for 104 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	51	1676.500
MW-9	53	3783.500

Mann-Whitney U test statistic = 350.500
Probability is 0.000
Chi-square approximation = 44.800 with 1 df

The following results are for:
PARAM_ID$ = TXL

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-9

Kruskal-Wallis One-Way Analysis of Variance for 3 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	1	1.000
MW-9	2	5.000

Mann-Whitney U test statistic = 0.000
Probability is 0.157
Chi-square approximation = 2.000 with 1 df

Appendix F-3
Parametric ANOVA Results

IMPORT successfully completed.

SYSTAT Rectangular file C:\CDM\Phibro\Apr02\1-11.syd,
created Sun May 26, 2002 at 10:58:38, contains variables:

WELL$ PARAM_ID$ VALUE LN_VALUE HD_VALUE HD_LN_VALU

The following results are for:
PARAM_ID$ = BEN

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-11, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 104 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-11	52	3295.500
MW-1S	52	2164.500

Mann-Whitney U test statistic = 1917.500
Probability is 0.000
Chi-square approximation = 15.143 with 1 df

The following results are for:
PARAM_ID$ = CD

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-11, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 104 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-11	52	2681.000
MW-1S	52	2779.000

Mann-Whitney U test statistic = 1303.000
Probability is 0.629
Chi-square approximation = 0.234 with 1 df

The following results are for:
PARAM_ID$ = CU

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-11, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 104 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum

MW-11 52 2802.000
MW-1S 52 2658.000
Mann-Whitney U test statistic = 1424.000
Probability is 0.607
Chi-square approximation = 0.265 with 1 df

The following results are for:
PARAM_ID$ = EBN

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-11, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 104 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group Count Rank Sum

MW-11 52 3998.500
MW-1S 52 1461.500
Mann-Whitney U test statistic = 2620.500
Probability is 0.000
Chi-square approximation = 70.956 with 1 df

The following results are for:
PARAM_ID$ = HCR

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-11, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 104 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group Count Rank Sum

MW-11 52 2683.500
MW-1S 52 2776.500
Mann-Whitney U test statistic = 1305.500
Probability is 0.698
Chi-square approximation = 0.150 with 1 df

The following results are for:
PARAM_ID$ = TCE

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-11, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 104 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group Count Rank Sum

MW-11 52 3978.000
MW-1S 52 1482.000
Mann-Whitney U test statistic = 2600.000
Probability is 0.000
Chi-square approximation = 65.857 with 1 df

The following results are for:

PARAM_ID$ = TCR

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-11, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 104 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-11	52	2749.000
MW-1S	52	2711.000

Mann-Whitney U test statistic = 1371.000
Probability is 0.855
Chi-square approximation = 0.034 with 1 df

The following results are for:
PARAM_ID$ = TOL

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-11, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 102 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-11	51	3611.500
MW-1S	51	1641.500

Mann-Whitney U test statistic = 2285.500
Probability is 0.000
Chi-square approximation = 48.195 with 1 df

The following results are for:
PARAM_ID$ = TX

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-11, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 102 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-11	51	3610.500
MW-1S	51	1642.500

Mann-Whitney U test statistic = 2284.500
Probability is 0.000
Chi-square approximation = 45.046 with 1 df

The following results are for:
PARAM_ID$ = TXL

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-11, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 2 cases
Dependent variable is VALUE

Grouping variable is WELL$

Group	Count	Rank Sum
MW-11	1	2.000
MW-1S	1	1.000

Mann-Whitney U test statistic = 1.000
Probability is 0.317
Chi-square approximation = 1.000 with 1 df

SYSTAT Rectangular file C:\CDM\Phibro\Apr02\1-14s.syd,
created Sun May 26, 2002 at 10:58:40, contains variables:

WELL$ PARAM_ID$ VALUE LN_VALUE HD_VALUE HD_LN_VALU

The following results are for:
PARAM_ID$ = BEN

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-14S, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 96 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-14S	44	2527.500
MW-1S	52	2128.500

Mann-Whitney U test statistic = 1537.500
Probability is 0.001
Chi-square approximation = 10.244 with 1 df

The following results are for:
PARAM_ID$ = CD

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-14S, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 96 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-14S	44	2203.500
MW-1S	52	2452.500

Mann-Whitney U test statistic = 1213.500
Probability is 0.419
Chi-square approximation = 0.654 with 1 df

The following results are for:
PARAM_ID$ = CU

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-14S, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 96 cases

Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-14S	44	2542.000
MW-1S	52	2114.000

Mann-Whitney U test statistic = 1552.000
Probability is 0.001
Chi-square approximation = 10.234 with 1 df

The following results are for:
PARAM_ID$ = EBN

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-14S, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 96 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-14S	44	2944.500
MW-1S	52	1711.500

Mann-Whitney U test statistic = 1954.500
Probability is 0.000
Chi-square approximation = 38.773 with 1 df

The following results are for:
PARAM_ID$ = HCR

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-14S, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 97 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-14S	45	2619.000
MW-1S	52	2134.000

Mann-Whitney U test statistic = 1584.000
Probability is 0.001
Chi-square approximation = 10.852 with 1 df

The following results are for:
PARAM_ID$ = TCE

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-14S, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 96 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-14S	44	3243.000
MW-1S	52	1413.000

Mann-Whitney U test statistic = 2253.000

Probability is 0.000
Chi-square approximation = 66.541 with 1 df

The following results are for:
PARAM_ID$ = TCR

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-14S, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 96 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-14S	44	3000.000
MW-1S	52	1656.000

Mann-Whitney U test statistic = 2010.000
Probability is 0.000
Chi-square approximation = 49.332 with 1 df

The following results are for:
PARAM_ID$ = TOL

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-14S, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 94 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-14S	43	2510.000
MW-1S	51	1955.000

Mann-Whitney U test statistic = 1564.000
Probability is 0.000
Chi-square approximation = 17.664 with 1 df

The following results are for:
PARAM_ID$ = TX

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-14S, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 94 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-14S	43	2509.500
MW-1S	51	1955.500

Mann-Whitney U test statistic = 1563.500
Probability is 0.000
Chi-square approximation = 14.009 with 1 df

The following results are for:
PARAM_ID$ = TXL

Categorical values encountered during processing are:
WELL$ (2 levels)

MW-14S, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 2 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-14S	1	2.000
MW-1S	1	1.000

Mann-Whitney U test statistic = 1.000
Probability is 0.317
Chi-square approximation = 1.000 with 1 df

SYSTAT Rectangular file C:\CDM\Phibro\Apr02\1-15s.syd,
created Sun May 26, 2002 at 10:58:42, contains variables:

WELL$ PARAM_ID$ VALUE LN_VALUE HD_VALUE HD_LN_VALU

The following results are for:
PARAM_ID$ = BEN

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-15S, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 97 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-15S	45	2251.000
MW-1S	52	2502.000

Mann-Whitney U test statistic = 1216.000
Probability is 0.684
Chi-square approximation = 0.165 with 1 df

The following results are for:
PARAM_ID$ = CD

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-15S, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 97 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-15S	45	2334.000
MW-1S	52	2419.000

Mann-Whitney U test statistic = 1299.000
Probability is 0.138
Chi-square approximation = 2.200 with 1 df

The following results are for:
PARAM_ID$ = CU

Categorical values encountered during processing are:

WELL$ (2 levels)
MW-15S, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 97 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-15S	45	2156.000
MW-1S	52	2597.000

Mann-Whitney U test statistic = 1121.000
Probability is 0.685
Chi-square approximation = 0.164 with 1 df

The following results are for:
PARAM_ID$ = EBN

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-15S, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 97 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-15S	45	2625.500
MW-1S	52	2127.500

Mann-Whitney U test statistic = 1590.500
Probability is 0.001
Chi-square approximation = 11.059 with 1 df

The following results are for:
PARAM_ID$ = HCR

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-15S, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 98 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-15S	46	2206.000
MW-1S	52	2645.000

Mann-Whitney U test statistic = 1125.000
Probability is 0.531
Chi-square approximation = 0.393 with 1 df

The following results are for:
PARAM_ID$ = TCE

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-15S, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 97 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum

MW-15S 45 1484.000
MW-1S 52 3269.000
Mann-Whitney U test statistic = 449.000
Probability is 0.000
Chi-square approximation = 27.227 with 1 df

The following results are for:
PARAM_ID$ = TCR

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-15S, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 97 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group Count Rank Sum

MW-15S 45 2429.000
MW-1S 52 2324.000
Mann-Whitney U test statistic = 1394.000
Probability is 0.024
Chi-square approximation = 5.060 with 1 df

The following results are for:
PARAM_ID$ = TOL

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-15S, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 95 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group Count Rank Sum

MW-15S 44 2306.000
MW-1S 51 2254.000
Mann-Whitney U test statistic = 1316.000
Probability is 0.062
Chi-square approximation = 3.496 with 1 df

The following results are for:
PARAM_ID$ = TX

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-15S, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 95 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group Count Rank Sum

MW-15S 44 2287.000
MW-1S 51 2273.000
Mann-Whitney U test statistic = 1297.000
Probability is 0.155
Chi-square approximation = 2.019 with 1 df

The following results are for:

PARAM_ID$ = TXL

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-15S, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 2 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-15S	1	1.500
MW-1S	1	1.500

Mann-Whitney U test statistic = 0.500
Probability is 1.000
Chi-square approximation = 0.000 with 1 df

SYSTAT Rectangular file C:\CDM\Phibro\Apr02\1-16.syd,
created Sun May 26, 2002 at 10:58:44, contains variables:

WELL$ PARAM_ID$ VALUE LN_VALUE HD_VALUE HD_LN_VALU

The following results are for:
PARAM_ID$ = BEN

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-16, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 91 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-16	39	2333.500
MW-1S	52	1852.500

Mann-Whitney U test statistic = 1553.500
Probability is 0.000
Chi-square approximation = 22.097 with 1 df

The following results are for:
PARAM_ID$ = CD

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-16, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 91 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-16	39	1782.000
MW-1S	52	2404.000

Mann-Whitney U test statistic = 1002.000
Probability is 0.853
Chi-square approximation = 0.035 with 1 df

The following results are for:
PARAM_ID$ = CU

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-16, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 91 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-16	39	1845.000
MW-1S	52	2341.000

Mann-Whitney U test statistic = 1065.000
Probability is 0.646
Chi-square approximation = 0.211 with 1 df

The following results are for:
PARAM_ID$ = EBN

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-16, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 91 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-16	39	2619.000
MW-1S	52	1567.000

Mann-Whitney U test statistic = 1839.000
Probability is 0.000
Chi-square approximation = 47.523 with 1 df

The following results are for:
PARAM_ID$ = HCR

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-16, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 91 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-16	39	1701.500
MW-1S	52	2484.500

Mann-Whitney U test statistic = 921.500
Probability is 0.345
Chi-square approximation = 0.892 with 1 df

The following results are for:
PARAM_ID$ = TCE

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-16, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 91 cases

Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-16	39	2777.500
MW-1S	52	1408.500

Mann-Whitney U test statistic = 1997.500
Probability is 0.000
Chi-square approximation = 62.264 with 1 df

The following results are for:
PARAM_ID$ = TCR

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-16, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 91 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-16	39	1816.000
MW-1S	52	2370.000

Mann-Whitney U test statistic = 1036.000
Probability is 0.745
Chi-square approximation = 0.106 with 1 df

The following results are for:
PARAM_ID$ = TOL

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-16, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 89 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-16	38	2318.500
MW-1S	51	1686.500

Mann-Whitney U test statistic = 1577.500
Probability is 0.000
Chi-square approximation = 31.871 with 1 df

The following results are for:
PARAM_ID$ = TX

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-16, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 89 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-16	38	2281.000
MW-1S	51	1724.000

Mann-Whitney U test statistic = 1540.000

Probability is 0.000
Chi-square approximation = 23.935 with 1 df

The following results are for:
PARAM_ID$ = TXL

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-16, MW-1S

Kruskal-Wallis One-Way Analysis of Variance for 2 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-16	1	2.000
MW-1S	1	1.000

Mann-Whitney U test statistic = 1.000
Probability is 0.317
Chi-square approximation = 1.000 with 1 df

SYSTAT Rectangular file C:\CDM\Phibro\Apr02\1-3.syd,
created Sun May 26, 2002 at 10:58:45, contains variables:

WELL$ PARAM_ID$ VALUE LN_VALUE HD_VALUE HD_LN_VALU

The following results are for:
PARAM_ID$ = BEN

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-3

Kruskal-Wallis One-Way Analysis of Variance for 104 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	2380.500
MW-3	52	3079.500

Mann-Whitney U test statistic = 1002.500
Probability is 0.010
Chi-square approximation = 6.672 with 1 df

The following results are for:
PARAM_ID$ = CD

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-3

Kruskal-Wallis One-Way Analysis of Variance for 104 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	2730.000
MW-3	52	2730.000

Mann-Whitney U test statistic = 1352.000
Probability is 1.000
Chi-square approximation = 0.000 with 1 df

The following results are for:
PARAM_ID$ = CU

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-3

Kruskal-Wallis One-Way Analysis of Variance for 104 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	2802.500
MW-3	52	2657.500

Mann-Whitney U test statistic = 1424.500
Probability is 0.583
Chi-square approximation = 0.302 with 1 df

The following results are for:
PARAM_ID$ = EBN

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-3

Kruskal-Wallis One-Way Analysis of Variance for 104 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	2056.000
MW-3	52	3404.000

Mann-Whitney U test statistic = 678.000
Probability is 0.000
Chi-square approximation = 21.952 with 1 df

The following results are for:
PARAM_ID$ = HCR

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-3

Kruskal-Wallis One-Way Analysis of Variance for 105 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	2762.000
MW-3	53	2803.000

Mann-Whitney U test statistic = 1384.000
Probability is 0.961
Chi-square approximation = 0.002 with 1 df

The following results are for:
PARAM_ID$ = TCE

Categorical values encountered during processing are:

WELL$ (2 levels)
MW-1S, MW-3

Kruskal-Wallis One-Way Analysis of Variance for 104 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	1616.500
MW-3	52	3843.500

Mann-Whitney U test statistic = 238.500
Probability is 0.000
Chi-square approximation = 52.449 with 1 df

The following results are for:
PARAM_ID$ = TCR

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-3

Kruskal-Wallis One-Way Analysis of Variance for 104 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	2656.500
MW-3	52	2803.500

Mann-Whitney U test statistic = 1278.500
Probability is 0.434
Chi-square approximation = 0.612 with 1 df

The following results are for:
PARAM_ID$ = TOL

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-3

Kruskal-Wallis One-Way Analysis of Variance for 102 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	51	2083.000
MW-3	51	3170.000

Mann-Whitney U test statistic = 757.000
Probability is 0.000
Chi-square approximation = 19.175 with 1 df

The following results are for:
PARAM_ID$ = TX

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-3

Kruskal-Wallis One-Way Analysis of Variance for 102 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum

MW-1S 51 2189.000
MW-3 51 3064.000
Mann-Whitney U test statistic = 863.000
Probability is 0.002
Chi-square approximation = 9.722 with 1 df

The following results are for:
PARAM_ID$ = TXL

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-3

Kruskal-Wallis One-Way Analysis of Variance for 2 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group Count Rank Sum

MW-1S 1 1.000
MW-3 1 2.000
Mann-Whitney U test statistic = 0.000
Probability is 0.317
Chi-square approximation = 1.000 with 1 df

SYSTAT Rectangular file C:\CDM\Phibro\Apr02\1-4.syd,
created Sun May 26, 2002 at 10:58:47, contains variables:

WELL$ PARAM_ID$ VALUE LN_VALUE HD_VALUE HD_LN_VALU

The following results are for:
PARAM_ID$ = BEN

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-4

Kruskal-Wallis One-Way Analysis of Variance for 107 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group Count Rank Sum

MW-1S 52 1760.500
MW-4 55 4017.500
Mann-Whitney U test statistic = 382.500
Probability is 0.000
Chi-square approximation = 46.210 with 1 df

The following results are for:
PARAM_ID$ = CD

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-4

Kruskal-Wallis One-Way Analysis of Variance for 107 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	1405.000
MW-4	55	4373.000

Mann-Whitney U test statistic = 27.000
Probability is 0.000
Chi-square approximation = 82.632 with 1 df

The following results are for:
PARAM_ID$ = CU

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-4

Kruskal-Wallis One-Way Analysis of Variance for 107 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	2526.000
MW-4	55	3252.000

Mann-Whitney U test statistic = 1148.000
Probability is 0.056
Chi-square approximation = 3.659 with 1 df

The following results are for:
PARAM_ID$ = EBN

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-4

Kruskal-Wallis One-Way Analysis of Variance for 107 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	1511.500
MW-4	55	4266.500

Mann-Whitney U test statistic = 133.500
Probability is 0.000
Chi-square approximation = 68.370 with 1 df

The following results are for:
PARAM_ID$ = HCR

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-4

Kruskal-Wallis One-Way Analysis of Variance for 107 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	1378.000
MW-4	55	4400.000

Mann-Whitney U test statistic = 0.000
Probability is 0.000
Chi-square approximation = 83.181 with 1 df

The following results are for:
PARAM_ID$ = TCE

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-4

Kruskal-Wallis One-Way Analysis of Variance for 107 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	1379.000
MW-4	55	4399.000

Mann-Whitney U test statistic = 1.000
Probability is 0.000
Chi-square approximation = 79.385 with 1 df

The following results are for:
PARAM_ID$ = TCR

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-4

Kruskal-Wallis One-Way Analysis of Variance for 107 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	1378.000
MW-4	55	4400.000

Mann-Whitney U test statistic = 0.000
Probability is 0.000
Chi-square approximation = 86.301 with 1 df

The following results are for:
PARAM_ID$ = TOL

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-4

Kruskal-Wallis One-Way Analysis of Variance for 105 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	51	1544.000
MW-4	54	4021.000

Mann-Whitney U test statistic = 218.000
Probability is 0.000
Chi-square approximation = 61.570 with 1 df

The following results are for:
PARAM_ID$ = TX

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-4

Kruskal-Wallis One-Way Analysis of Variance for 104 cases

Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	51	1406.500
MW-4	53	4053.500

Mann-Whitney U test statistic = 80.500
Probability is 0.000
Chi-square approximation = 70.570 with 1 df

The following results are for:
PARAM_ID$ = TXL

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-4

Kruskal-Wallis One-Way Analysis of Variance for 3 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	1	1.000
MW-4	2	5.000

Mann-Whitney U test statistic = 0.000
Probability is 0.221
Chi-square approximation = 1.500 with 1 df

SYSTAT Rectangular file C:\CDM\Phibro\Apr02\1-6B.syd,
created Sun May 26, 2002 at 10:58:49, contains variables:

WELL$ PARAM_ID$ VALUE LN_VALUE HD_VALUE HD_LN_VALU

The following results are for:
PARAM_ID$ = BEN

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-6B

Kruskal-Wallis One-Way Analysis of Variance for 100 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	2563.000
MW-6B	48	2487.000

Mann-Whitney U test statistic = 1185.000
Probability is 0.605
Chi-square approximation = 0.267 with 1 df

The following results are for:
PARAM_ID$ = CD

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-6B

Kruskal-Wallis One-Way Analysis of Variance for 100 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	2574.000
MW-6B	48	2476.000

Mann-Whitney U test statistic = 1196.000
Probability is 0.552
Chi-square approximation = 0.355 with 1 df

The following results are for:
PARAM_ID$ = CU

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-6B

Kruskal-Wallis One-Way Analysis of Variance for 100 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	2726.500
MW-6B	48	2323.500

Mann-Whitney U test statistic = 1348.500
Probability is 0.417
Chi-square approximation = 0.660 with 1 df

The following results are for:
PARAM_ID$ = EBN

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-6B

Kruskal-Wallis One-Way Analysis of Variance for 100 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	2317.500
MW-6B	48	2732.500

Mann-Whitney U test statistic = 939.500
Probability is 0.018
Chi-square approximation = 5.561 with 1 df

The following results are for:
PARAM_ID$ = HCR

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-6B

Kruskal-Wallis One-Way Analysis of Variance for 101 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	2764.000
MW-6B	49	2387.000

Mann-Whitney U test statistic = 1386.000
Probability is 0.340
Chi-square approximation = 0.911 with 1 df

The following results are for:
PARAM_ID$ = TCE

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-6B

Kruskal-Wallis One-Way Analysis of Variance for 100 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	2921.500
MW-6B	48	2128.500

Mann-Whitney U test statistic = 1543.500
Probability is 0.041
Chi-square approximation = 4.160 with 1 df

The following results are for:
PARAM_ID$ = TCR

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-6B

Kruskal-Wallis One-Way Analysis of Variance for 100 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	2408.000
MW-6B	48	2642.000

Mann-Whitney U test statistic = 1030.000
Probability is 0.028
Chi-square approximation = 4.830 with 1 df

The following results are for:
PARAM_ID$ = TOL

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-6B

Kruskal-Wallis One-Way Analysis of Variance for 98 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	51	2281.500
MW-6B	47	2569.500

Mann-Whitney U test statistic = 955.500
Probability is 0.036
Chi-square approximation = 4.391 with 1 df

The following results are for:
PARAM_ID$ = TX

Categorical values encountered during processing are:

WELL$ (2 levels)
MW-1S, MW-6B

Kruskal-Wallis One-Way Analysis of Variance for 98 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	51	2364.000
MW-6B	47	2487.000

Mann-Whitney U test statistic = 1038.000
Probability is 0.203
Chi-square approximation = 1.622 with 1 df

The following results are for:
PARAM_ID$ = TXL

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-6B

Kruskal-Wallis One-Way Analysis of Variance for 2 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	1	1.500
MW-6B	1	1.500

Mann-Whitney U test statistic = 0.500
Probability is 1.000
Chi-square approximation = 0.000 with 1 df

SYSTAT Rectangular file C:\CDM\Phibro\Apr02\1-7.syd,
created Sun May 26, 2002 at 10:58:51, contains variables:

WELL$ PARAM_ID$ VALUE LN_VALUE HD_VALUE HD_LN_VALU

The following results are for:
PARAM_ID$ = BEN

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-7

Kruskal-Wallis One-Way Analysis of Variance for 104 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	2284.000
MW-7	52	3176.000

Mann-Whitney U test statistic = 906.000
Probability is 0.001
Chi-square approximation = 10.095 with 1 df

The following results are for:
PARAM_ID$ = CD

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-7

Kruskal-Wallis One-Way Analysis of Variance for 104 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	2634.500
MW-7	52	2825.500

Mann-Whitney U test statistic = 1256.500
Probability is 0.345
Chi-square approximation = 0.890 with 1 df

The following results are for:
PARAM_ID$ = CU

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-7

Kruskal-Wallis One-Way Analysis of Variance for 104 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	2351.500
MW-7	52	3108.500

Mann-Whitney U test statistic = 973.500
Probability is 0.008
Chi-square approximation = 6.995 with 1 df

The following results are for:
PARAM_ID$ = EBN

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-7

Kruskal-Wallis One-Way Analysis of Variance for 104 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	2191.000
MW-7	52	3269.000

Mann-Whitney U test statistic = 813.000
Probability is 0.000
Chi-square approximation = 14.558 with 1 df

The following results are for:
PARAM_ID$ = HCR

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-7

Kruskal-Wallis One-Way Analysis of Variance for 104 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	2777.500
MW-7	52	2682.500

Mann-Whitney U test statistic = 1399.500
Probability is 0.699
Chi-square approximation = 0.149 with 1 df

The following results are for:
PARAM_ID$ = TCE

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-7

Kruskal-Wallis One-Way Analysis of Variance for 104 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	1451.000
MW-7	52	4009.000

Mann-Whitney U test statistic = 73.000
Probability is 0.000
Chi-square approximation = 69.179 with 1 df

The following results are for:
PARAM_ID$ = TCR

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-7

Kruskal-Wallis One-Way Analysis of Variance for 104 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	2583.500
MW-7	52	2876.500

Mann-Whitney U test statistic = 1205.500
Probability is 0.148
Chi-square approximation = 2.088 with 1 df

The following results are for:
PARAM_ID$ = TOL

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-7

Kruskal-Wallis One-Way Analysis of Variance for 102 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	51	2230.500
MW-7	51	3022.500

Mann-Whitney U test statistic = 904.500
Probability is 0.001
Chi-square approximation = 11.369 with 1 df

The following results are for:
PARAM_ID$ = TX

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-7

Kruskal-Wallis One-Way Analysis of Variance for 102 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	51	2391.000
MW-7	51	2862.000

Mann-Whitney U test statistic = 1065.000
Probability is 0.084
Chi-square approximation = 2.978 with 1 df

The following results are for:
PARAM_ID$ = TXL

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-7

Kruskal-Wallis One-Way Analysis of Variance for 2 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	1	1.500
MW-7	1	1.500

Mann-Whitney U test statistic = 0.500
Probability is 1.000
Chi-square approximation = 0.000 with 1 df

SYSTAT Rectangular file C:\CDM\Phibro\Apr02\1-9.syd,
created Sun May 26, 2002 at 10:58:53, contains variables:

WELL$ PARAM_ID$ VALUE LN_VALUE HD_VALUE HD_LN_VALU

The following results are for:
PARAM_ID$ = BEN

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-9

Kruskal-Wallis One-Way Analysis of Variance for 107 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	1789.500
MW-9	55	3988.500

Mann-Whitney U test statistic = 411.500
Probability is 0.000
Chi-square approximation = 43.276 with 1 df

The following results are for:
PARAM_ID$ = CD

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-9

Kruskal-Wallis One-Way Analysis of Variance for 107 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	2764.500
MW-9	55	3013.500

Mann-Whitney U test statistic = 1386.500
Probability is 0.662
Chi-square approximation = 0.191 with 1 df

The following results are for:
PARAM_ID$ = CU

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-9

Kruskal-Wallis One-Way Analysis of Variance for 107 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	2847.000
MW-9	55	2931.000

Mann-Whitney U test statistic = 1469.000
Probability is 0.781
Chi-square approximation = 0.077 with 1 df

The following results are for:
PARAM_ID$ = EBN

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-9

Kruskal-Wallis One-Way Analysis of Variance for 107 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	1641.500
MW-9	55	4136.500

Mann-Whitney U test statistic = 263.500
Probability is 0.000
Chi-square approximation = 55.816 with 1 df

The following results are for:
PARAM_ID$ = HCR

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-9

Kruskal-Wallis One-Way Analysis of Variance for 107 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	2293.500
MW-9	55	3484.500

Mann-Whitney U test statistic = 915.500
Probability is 0.000
Chi-square approximation = 13.451 with 1 df

The following results are for:
PARAM_ID$ = TCE

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-9

Kruskal-Wallis One-Way Analysis of Variance for 107 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	1387.500
MW-9	55	4390.500

Mann-Whitney U test statistic = 9.500
Probability is 0.000
Chi-square approximation = 78.427 with 1 df

The following results are for:
PARAM_ID$ = TCR

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-9

Kruskal-Wallis One-Way Analysis of Variance for 107 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	52	2207.500
MW-9	55	3570.500

Mann-Whitney U test statistic = 829.500
Probability is 0.000
Chi-square approximation = 20.528 with 1 df

The following results are for:
PARAM_ID$ = TOL

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-9

Kruskal-Wallis One-Way Analysis of Variance for 105 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	51	1621.500
MW-9	54	3943.500

Mann-Whitney U test statistic = 295.500
Probability is 0.000
Chi-square approximation = 53.983 with 1 df

The following results are for:
PARAM_ID$ = TX

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-9

Kruskal-Wallis One-Way Analysis of Variance for 104 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	51	1676.500
MW-9	53	3783.500

Mann-Whitney U test statistic = 350.500
Probability is 0.000
Chi-square approximation = 44.800 with 1 df

The following results are for:
PARAM_ID$ = TXL

Categorical values encountered during processing are:
WELL$ (2 levels)
MW-1S, MW-9

Kruskal-Wallis One-Way Analysis of Variance for 3 cases
Dependent variable is VALUE
Grouping variable is WELL$

Group	Count	Rank Sum
MW-1S	1	1.000
MW-9	2	5.000

Mann-Whitney U test statistic = 0.000
Probability is 0.157
Chi-square approximation = 2.000 with 1 df